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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
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PERIODIC BRIEFING ON NEW REACTOR ISSUES –  
DESIGN CERTIFICATIONS  
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TUESDAY  
APRIL 6, 2010  
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The Commission convened at 9:00 a.m., the  
Honorable Gregory B. Jaczko, Chairman, presiding.

- NUCLEAR REGULATORY COMMISSION
- GREGORY B. JACZKO, CHAIRMAN
- KRISTINE L. SVINICKI, COMMISSIONER
- WILLIAM D. MAGWOOD, IV, COMMISSIONER
- WILLIAM C. OSTENDORFF, COMMISSIONER

1        DESIGN CERTIFICATION PANEL

2        SANDY RUPPRECHT, VP REGULATORY AFFAIRS AND

3 STRATEGY, WESTINGHOUSE ELECTRIC COMPANY

4        JERALD HEAD, SENIOR VP REGULATORY AFFAIRS, GE HITACHI

5 NUCLEAR ENERGY

6        THOMAS SLIVA, VP NEW PLANT PROJECTS, AREVA

7        FRANK GILLESPIE, SENIOR VP, MITSUBISHI NUCLEAR ENERGY

8 SYSTEMS

9        ROBERT SCHRAUDER, VP LICENSING, TOSHIBA

10

11        ADVANCED REACTORS PANEL

12        RICHARD BLACK, ASSOCIATE DEPUTY ASSISTANT

13 SECRETARY FOR NUCLEAR POWER DEPLOYMENT, DOE

14        CHRISTOFER MOWRY, PRESIDENT AND CEO,

15 MODULAR NUCLEAR ENERGY, BABCOCK AND WILCOX

16        MICHAEL ANNESS, MANAGER ADVANCED REACTORS,

17 WESTINGHOUSE

18        PAUL LORENZINI, CHIEF EXECUTIVE OFFICER,

19 NUSCALE

20

21        NRC STAFF--PANEL 3

22        BRUCE MALLET, DEPUTY EXECUTIVE DIRECTOR

1 FOR REACTOR AND PREPAREDNESS PROGRAMS

2 MICHAEL JOHNSON, DIRECTOR, OFFICE OF NEW REACTORS

3 FRANK AKSTULEWICZ, NRO

4 MICHAEL MAYFIELD, NRO

5 WILLIAM RECKLEY, NRO

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1 P-R-O-C-E-E-D-I-N-G-S

2 CHAIRMAN JACZKO: Good morning.

3 Before we begin, or as we begin, I want to welcome  
4 our two newest Commissioners, Commissioner Magwood and  
5 Commissioner Ostendorff, to their first Commission briefing.

6 So, welcome.

7 Commissioner Apostolakis, who's in the  
8 process of relocating from Massachusetts, is going  
9 to be joining us later in the month and then we'll  
10 be at a full 5 member Commission for the first time  
11 in a little while.

12 I think that it's a great thing for the  
13 agency, and I think it will be a great thing for  
14 the country to have all -- certainly the talented  
15 individuals joining the Commission that we have  
16 and, of course, combined with Commission Svinicki  
17 and her excellent service as a member of this  
18 Commission.

19 Today, we will be talking about one of the  
20 more high-profile issues that affects this agency  
21 right now and that is the work we are doing to  
22 review design certifications for new reactors.

1           Our meeting today will focus on the policy  
2 issues concerning design certifications and a  
3 status update for the Gen. 3 reactors, as well as  
4 for the advanced reactors.

5           Specifically, the Commission will discuss  
6 the strength of the design process, potential areas  
7 for improvement, and the lessons we might apply to  
8 the advanced reactor area.

9           We'll also have to grapple with some  
10 general policy issues that need to be worked  
11 through before the potential approval of any  
12 combined license applications, or the possible  
13 submission of advanced reactor design certification  
14 request.

15           I think it is important to remember sometimes  
16 the history here, when the Commission reformed the  
17 licensing process, the Commission thought it would  
18 best to ensure an efficient, predictable and  
19 comprehensive safety reviews by encouraging  
20 applicants to first submit completed design  
21 applications.

22           The process, of course, hasn't exactly

1 worked as we've envisioned, as probably no  
2 process ever does.

3 I think once these design certifications  
4 are complete, the future applicants for licenses  
5 will be able to refer to these designs and their  
6 applications and proceed through the COL review  
7 process, really, in a much more systematic way,  
8 than I think is certainly possible now.

9 Whether the applications are reviewed  
10 sequentially or concurrently as we are doing, the  
11 agency will always maintain our focus in ensuring  
12 that all applications meet our safety, security,  
13 and environmental requirements.

14 Before we begin with the presentations, I  
15 would like to recognize that the NRO and NSIR's  
16 staffs' hard work on these issues.

17 I think there's been a lot of work that's  
18 gone, and the folks from the General Counsel's  
19 office, as well and the work that has been done by  
20 the applicants and members of the public.

21 We have all effectively addressed the  
22 technical issues associated with reviewing new

1 reactor designs and modifications that employ these  
2 first of a kind technologies.

3 I want to really commend the staff too for  
4 really in depth managing the concurrent reviews  
5 of these design certifications in the COL  
6 applications.

7 I think it has been a complicated endeavor,  
8 and I think it's one in which a lot of good people  
9 have been working in very good faith to do this  
10 work and to do it effectively and always  
11 maintaining focus on safety and security.

12 In addition to hearing from the staff  
13 today, we'll also get presentations from our  
14 colleagues from the Department of Energy as well as  
15 several vendors.

16 So, I will now turn it over to any of my  
17 fellow Commissioners if they would like to make  
18 remarks.

19 COMMISSIONER SVINICKI: Thank you, Mr. Chairman.

20 I would certainly join you in welcoming our  
21 two new colleagues here today.

22 You and I have become used to a little more

1 real estate and elbow room.

2 This is very -- it's a welcomed crowd.

3 I'm very happy to have a little less elbow  
4 room now, so I welcome them both.

5 As I was listening to your remark on the  
6 subject matter for today, I know we do these  
7 periodic briefings on new reactors, but I'm always  
8 surprised and new about how much is going on, how  
9 much content there is so I'm glad we take a  
10 periodic look at this, and I look forward to the  
11 presentations today. Thank you.

12 COMMISSIONER MAGWOOD: Thank you, Chairman.

13 First, great pleasure to be here.

14 I'm sorry it took so long for me to get  
15 here, but it wasn't my fault.

16 I just wanted to first thank you for  
17 everything you've done to make this process easy  
18 and to welcome us so readily to the Commission.

19 I look forward to working with you and  
20 Commissioner Svinicki, and Commissioner Ostendorff,  
21 and Commissioner Apostolakis, once he arrives.

22 To those of you who have joined us today, I

1 just wanted to acknowledge that I think we have  
2 learned a lot, we collectively have learned a lot  
3 as this process has moved forward, both on the  
4 Commission side, and on the industry side, and on  
5 DOE's side; I know Dick Black is here somewhere.

6 I think everyone has learned that this is a  
7 somewhat more challenging endeavor.

8 Not from a regulatory standpoint,  
9 necessarily, but just in the process of building  
10 new nuclear power plants in the United States than  
11 I think some people thought.

12 I think some of us knew it would be  
13 challenging, but I think a lot of people are  
14 learning that it is a very detailed process, it has  
15 to be done right, and as we go through this first  
16 wave of new nuclear power plants that we are now  
17 examining, it is important to get it right.

18 I look forward to working with all of you  
19 to make sure that we do get it right.

20 Thank you.

21 COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman.

22 I'm very pleased to be here and excited to

1 be working along with my colleagues.

2 My background is strictly on the nuclear  
3 side with driving submarines for 26 years, so I  
4 have a lot to learn from industry on the new  
5 reactor designs, and their high technology  
6 approaches to things that I'm not familiar with.

7 So, I'm very excited about this opportunity  
8 and look forward very much to learning from the  
9 briefings today, and hopefully, ask a few  
10 questions.

11 CHAIRMAN JACZKO: Well, with that, now that we  
12 probably took longer than we were allotted for our opening  
13 remarks, I'm going to ask everyone to be very strict on  
14 the time that we have.

15 We have a lot to cover, and we certainly  
16 want to save time for Commissioners to have  
17 comments.

18 If you could be mindful of the time, we will  
19 get through all of the presentations.

20 I think it will begin with Mr. Rupprecht  
21 who is the Vice President of Regulatory Affairs and  
22 Strategy for Westinghouse.

1 MR. RUPPRECHT: Good morning.

2 Let me echo a couple of thoughts the  
3 Commissioners already outlined.

4 We have to get this right, we are  
5 anticipating many of these plants to operate,  
6 potentially, between 60 and 100 years.

7 A key element of that, and I think I speak  
8 for all of my colleagues here, is having a very  
9 competent regulator and a very efficient process.

10 We have a lot of very positive things to  
11 say and I think we will put it in the vein of some  
12 areas for improvement.

13 I would certainly say there are many  
14 elements of it that are working and working well.

15 With respect to myself from Westinghouse  
16 and some of my comments, one of the slides I  
17 provided to all of you just shows a picture from  
18 Reg. Guide 1.206, and I think this is a picture  
19 that I have used a lot with my customers and  
20 others.

21 And that diagram outlines -- on the  
22 vertical axis shows the percent of design

1 completion and across the horizontal axis shows the  
2 scope, and if you look at the bottom left hand  
3 segment of it that is really design certification.

4 This is a really powerful figure  
5 conceptually, translating it into day-to-day  
6 operation is where the challenge becomes, because  
7 as the figure shows, it was never intended that  
8 there was a complete design when we went for design  
9 certification.

10 Also, I don't think we anticipated years  
11 ago that in some cases we would be doing design  
12 finalization concurrently with certain design  
13 certification activities and rulemaking.

14 That raises certain challenges.

15 One of the key ones is where is adequate  
16 design, where is it sufficient such that we can  
17 establish reasonable assurance in the design  
18 certification process, and then in parallel to that  
19 we are doing a lot of design finalization,  
20 Westinghouse as well as some of my other colleagues  
21 in the same situation where we are finalizing a  
22 design in China while we are still going design

1 cert.

2 One of the questions I always get asked by  
3 customers is, when will you stop changing the  
4 design?

5 The reality of it is, never.

6 There will always be design changes, but  
7 they typically are going to be second and third  
8 order design changes.

9 Yet, how we manage that process in parallel  
10 working with the agency and managing those changes  
11 and how effectively so the agency can do its job  
12 and assure reasonable assurance.

13 Those are two key challenges I see, what is  
14 adequate to start with and then doing much of this  
15 in parallel and managing it very effectively.

16 If you go to my last side, I have a series  
17 of good practices in areas for communication and  
18 things I want to laud the agency for is  
19 communication.

20 I would tell you that the communication is  
21 excellent, we have great accessibilities to all  
22 levels of management, and I tell you that I think

1 all of my colleagues agree, communicating  
2 frequently and often is a key to this because  
3 you just can't write enough down on paper in Reg.  
4 Guides, Standard Review Plans, etc, et cetera. There has to be a  
5 lot of dialogue and communication and project  
6 management discipline.

7       There is huge amounts of information that  
8 is all coming together that has to be choreographed  
9 to get there just at the right time, at the right  
10 place, for the right people.

11       I've seen some very positive aspects,  
12 particularly out of the agency on project  
13 management and I would tell you also, I applaud the  
14 agency, I think in working with Westinghouse I can  
15 say a really good balance between public disclosure  
16 and protecting proprietary information are the  
17 things we see as real strengths have been a  
18 hallmark of some of the success that we have had.

19       Areas for improvement going back to some of  
20 my opening remarks, the level of design detail to  
21 satisfy reasonable assurance.

22       You can always take engineers and

1 independent whether regulator, vendor, other  
2 stakeholders, and trying to establish where is that  
3 reasonable assurance point has its challenges and  
4 trying to get to the point where it's just not  
5 bring me another rock.

6 Because in the extreme you can complete the  
7 entire design during the design certification  
8 process.

9 That was never the intent.

10 There's a lot of onus on the vendors though  
11 to make sure that we have adequately taken the  
12 design far enough, so we can make that case and  
13 demonstrate that reasonable assurance.

14 I'm not trying to indicate that this is  
15 solely an agency issue.

16 I think all of these issues have  
17 collective -- have roots in both the vendors and  
18 the agency.

19 As I mentioned earlier, this management of  
20 changes, what is the process, how do we disclose in  
21 a timely fashion, how do we share that information  
22 and keep the public informed, is quite a challenge.

1           The last one I said the rulemaking process  
2   and that is probably -- I probably have -- should  
3   have chosen some different words there, really  
4   involves how we tie all of the ends together after  
5   we have gone through ACRS meetings, etc, et cetera and how we  
6   effectively get that into a package to go into  
7   rulemaking is an area where there seems to be quite  
8   a bit of dialogue and even at times debate, both  
9   within the vendors and then when I work with my  
10  counterparts within the agency.

11           It is certainly not adversarial or  
12  acrimonious, but a lot of healthy dialogue about  
13  how most efficiently to do this, recognize that  
14  there's a lot of competing priorities going on.

15           With that, I will conclude my remarks.

16           MR. HEAD: Again, I want to thank the Commission  
17  for the opportunity to provide remarks here. This is  
18  something that is very important to us as a vendor and also  
19  to the industry.

20           We have gone through significant amount of  
21  effort over the past few years on both sides. We  
22  have learned a lot, and I think in all activities

1 like this it's a good time to reflect what could we  
2 do differently, what could we do better, take those  
3 lessons learned going forward.

4       Initially, I would like say that the Part  
5 52 process is working.

6       There's a lot of debate back and forth  
7 about how it could work better.

8       The fact that, as you mentioned before, we  
9 are doing this COL process and DCD process in  
10 parallel is not something we envisioned, it has  
11 introduced problems that we have managed to  
12 overcome within the licensing regulations we have  
13 in place already.

14       It's taken work on both parts, but I think  
15 it has worked well.

16       NRC has made a lot of attempts to try to  
17 make the process more efficient, and I want to  
18 applaud you for that.

19       I think the efforts that we have made with  
20 the ACRS, for instance, to review chapters early in  
21 the process so that we knew early on in the process  
22 where the pitfalls may be was something that was a

1 significant benefit to both parties as we went  
2 forward through that process.

3 We anticipate taking the ESBWR  
4 certification through rulemaking shortly, as Sandy  
5 mentioned before.

6 That is the next step in the process.

7 It is again uncharted territory, at least in  
8 today's environment, and we will have to work  
9 together to have open communication on that process  
10 as we go forward to make sure that we are  
11 successful because it is untested waters for us.

12 The NRC, I want to commend you on being  
13 able to ramp up on resources.

14 It was a tight market to get technical  
15 people capable of looking at the designs we have  
16 been bringing forward.

17 We were in competition with our  
18 counterparts here and with you for resources.

19 I think you have done an outstanding job  
20 getting the right people to look at the things that  
21 we've been bringing forth, although in all honesty,  
22 all of us have brought forth technology that had

1 not been looked at before in a regulatory  
2 environment, so that introduced challenges by itself.

3 I think that has been successful so far.

4 The first of a kind issues are always  
5 difficult and again, you get into the situation  
6 where you run into how much detail is sufficient,  
7 and we didn't have history there.

8 One of the things Sandy mentioned already,  
9 that dialogue -- open dialogue with the Commission  
10 or with the staff on how much is enough here, is  
11 something that we learned from as time went on.

12 I think that is a valuable lessons learned  
13 as we go forward in the next generation of reactors  
14 for small modular and other advanced reactors. We  
15 need to be open in that dialogue early on to  
16 determine, jointly, how much is truly enough here  
17 for the certification process.

18 I think that is an important lesson to  
19 carry forward.

20 As Sandy mentioned also, the management of  
21 the NRC review process is something that needs to  
22 be transparent, probably more transparent to

1 applicants as well from the standpoint of project  
2 management.

3 We ran into issues, if we were to look at  
4 lessons learned where project managers changed,  
5 where reviewers changed, we were lucky we had the  
6 same project manager for the whole time.

7 Where the reviewers changed, we often took  
8 two steps backwards because the new person had to  
9 come up to speed, they were reopening things that  
10 we thought had already been closed, and that is  
11 something from a management standpoint going  
12 forward we need to be conscious of especially in  
13 the next generation of reactors we go look at.

14 I think that is something that is a  
15 valuable lessons learned that applicants and the NRC  
16 need to have discussions on.

17 From the standpoint of project management  
18 also, trying to get an understanding on both sides  
19 of what the scope of the review hours, what  
20 anticipated schedules we are going to be looking at  
21 on the reviews is something that's important to both  
22 too, because we're both trying to juggle

1 appropriate milestones and schedules to get to the  
2 appropriate handoffs at the right time, have the  
3 appropriate resources ready when that information  
4 becomes available, and that is something I think  
5 that is daily dialogue with the project managers is  
6 something that we learned going through the process  
7 and is valuable going forward.

8       As Sandy mentioned already and I've eluded  
9 to it as well, the expectations regarding  
10 sufficient level of detail either need to be  
11 established on the front-end or we need to have the  
12 opportunity in the process to say, okay, let's do a  
13 timeout and discuss where we are going right now.

14       Is this going beyond what we need for  
15 certification, and have that open dialogue as the  
16 process goes forward.

17       Again, we are all going places we have not  
18 gone before from the standpoint of the regulatory  
19 environment, and the technologies we are bringing  
20 forward in front of the NRC now.

21       All in all, I think this process has worked  
22 well. I think we have learned a lot. We have had a

1 lot of one-on-one dialogue with the staff and it  
2 has been successful going forward, and I look  
3 forward to completing the certification process and  
4 rulemaking for ESBWR.

5 Thank you.

6 CHAIRMAN JACZKO: We will now turn to Thomas  
7 Sliva, the Vice President of New Plant Projects at AREVA.

8 MR. SLIVA: Thank you, Mr. Chairman, it's a  
9 pleasure to be here today.

10 When I was brought out of retirement and  
11 was asked by AREVA to assume this position, I never  
12 thought that I would have the opportunity to  
13 address the Commission itself.

14 Again, this is a great pleasure for me.

15 Last time I was in this situation was years  
16 ago where I represented our homeowners association  
17 in the city of Chicago to Mayor Daley, my remarks  
18 on that occasion were so effective that the next  
19 day the Mayor had our water shut off.

20 I'm hoping I do a little bit better today.

21 Going third, I could probably stay easily  
22 within the time allotted.

1           Certainly, I'm in agreement with the points  
2 my colleagues have brought up as far as the  
3 industry perception of the Part 52 process.

4           All in all, I think the process itself is  
5 sound and it has been put into effect as a  
6 first-time process with many complex parts fairly  
7 effectively.

8           We agree with our colleagues that the  
9 design certification is important, because it  
10 represents a plant that will be around for 60  
11 possibly to 100 years.

12          Certainly, that's the design intent.

13          We certainly respect decisions that are  
14 being made on that design by the staff, and in many  
15 cases, the comments we received have been helpful in  
16 improving the design and I would also like to  
17 comment in no cases have we received questions where we felt  
18 that the questions were outside the bounds of the  
19 regulations.

20          The staff, in that respect, has been  
21 excellent to work with and was a high point in us  
22 being able to push our design forward.

1           In particular, things we think are working  
2 very well that haven't been brought up by my  
3 colleagues, we think the design centered working  
4 group forum is very effective.

5           I think it brings all stakeholders in a  
6 particular design together in an interactive  
7 fashion that has brought benefits to our design  
8 group, and I think it gives us an opportunity to  
9 understand issues and other design groups that are  
10 generic in nature and gives us advance notice on  
11 how to address those designs.

12           We really think the design centered working  
13 group process is a good one, and we are going to  
14 look internally in our own dealings with the design  
15 center to improve that process to maximum  
16 efficiency.

17           That has been an outstanding innovation  
18 under the Part 52 process.

19           The other thing we were very pleased with  
20 and continue to be pleased with is the close  
21 coordination we have with the staff in preparation  
22 for ACRS meetings.

1           That process, we think, brings benefit to  
2 both sides. Again, it's helped us enhance our  
3 design and become aware of the issues that are  
4 confronting the staff in presenting the design to  
5 the ACRS. The fact that the staff has consulted us  
6 on most occasions, if not all occasions in  
7 preparing for ACRS meetings, we  
8 think it is a great benefit to the  
9 design center and to the design itself.

10           It has been an outstanding aspect of the  
11 program.

12           The one area that we think we are  
13 struggling with and my colleagues have alluded to  
14 this as well, is the closure and the level of  
15 detail to close lingering issues with the design.

16           One thing has happened with the staff that  
17 has been extraordinary is the level of  
18 communication has gone up dramatically during the  
19 review process.

20           I think the communications are very crisp,  
21 very professional, and from our view point, very  
22 positive in trying to understand how to help the

1 staff explain away questions in the design that to  
2 us as designers may be intuitively obvious, but we  
3 haven't communicated effectively to allow the staff  
4 to make independent judgment.

5 So we are, as with our colleagues, trying to  
6 work with the staff to ascertain how do we achieve  
7 closure on open issues, what level of detail is  
8 required to close open issues, I think is something  
9 that needs a little bit more attention on both  
10 sides, but I will say we are working towards it and  
11 the cooperation of the staff in that regard has  
12 been outstanding.

13 2010 is an important year for AREVA's  
14 certification.

15 During 2010, we hope to be able to present  
16 to the staff the last of our technical  
17 justifications for the design and receive staff  
18 approval on those justifications indicating that  
19 the design has met the staff's standards for  
20 safety.

21 From there we go forward into rulemaking,  
22 which is everyone's comment that it is relatively

1 uncharted waters, but we look forward to entering  
2 those waters and fully anticipate a successful  
3 conclusion to the design certification process for  
4 AREVA.

5 I would like to thank you for the  
6 opportunity to speak, and I hope you don't  
7 influence shutting off my water.

8 CHAIRMAN JACZKO: Thank you.

9 We will now have Mr. Gillespie who is the  
10 Senior Vice President for Mitsubishi Nuclear Energy  
11 Systems.

12 MR. GILLESPIE: Thank you, Mr. Chairman.

13 It is funny being on this side of the table  
14 talking from the dark side after many years.

15 I do appreciate being here and I think  
16 Mitsubishi has had a slightly different experience  
17 than potentially the other vendors, we came in a  
18 little later and I think equally positive.

19 I would like to open my comments with where  
20 we stand right now.

21 December of 2007 we submitted our DCD which  
22 was a little later than everybody else, but as of

1 right now we are still basically officially on schedule.

2 There may be some slippage in that, but we  
3 do greatly appreciate 2 1/4 years into it still  
4 being on our original schedule.

5 The uniqueness about my comments on both of  
6 my lessons learned and my positive slides is that  
7 we had very limited pre-application review time.

8 That is the difference between our review  
9 and the other reviews.

10 We did submit many topical reports about a  
11 year in advance of the application, but what we did not  
12 do is notify the NRC a year in advance of that for  
13 budget plans.

14 The NRC staff was totally open about that  
15 which has given us and the staff the need to both  
16 do what others might have done in pre-application,  
17 at the same time we're doing the DCD review.

18 As interesting with us is, if you put my  
19 first slide up, please.

20 We have maintained a success of staying on  
21 schedule with the staff.

22 The level of detail and the level of design

1 detail in our design, has not been an issue with us.

2 I'm going to get back on my lessons  
3 learned slide and see our issue has been slightly  
4 different and really applicable to that missing  
5 pre-application review period.

6 I would mimic the other participants here,  
7 the Part 52 process has worked extremely well for  
8 us.

9 We have adapted, the staff's adapted, and I  
10 think has made the whole process go smoother.

11 For Mitsubishi, communications has  
12 continuously improved during the DCD review, and in  
13 time, I think both we and the staff found what I  
14 call the right mix of people with the right  
15 capability, and the right temperament on both  
16 sides, that mix was essential for success.

17 My request would be as we approach our last  
18 year of intense interface with the staff, please  
19 keep the staff as stable as possible for us.  
20 Changing reviewers at this late stage would present  
21 a disruption that we saw earlier and the system is  
22 matured and is working very, very well right now between

1 us, and the staff, and our technical staffs.

2 The staff has been very flexible with us,  
3 they have adjusted intermediate schedules without  
4 necessarily changing the end schedule that we were  
5 working towards and that has allowed us to modify  
6 some of our deliverables, get extra deliverables in  
7 when necessary, and split reports.

8 Communications and working with the staff  
9 has gone very well.

10 Schedules are taken very seriously on both  
11 sides, and that has led to a great stability in the  
12 process.

13 Now, let me get to areas for improvement.

14 Again, our areas for improvement come from,  
15 probably, the lack of looking at those topical  
16 reports and the methodological reports from the  
17 beginning.

18 The guidance in the form of NUREGS and  
19 SRPs, there is some secondary updating that  
20 probably needs to be done that wasn't done  
21 originally.

22 Some examples of that would be and this is

1 going to be an interesting one, the GALE code which  
2 is used to calculate effluents endorsed by  
3 regulatory guide, which will cause a designer to  
4 have to have either evaporators, de-gasifiers, or an  
5 extremely large evaporation pond as part of the  
6 plan, but it's not actually necessarily  
7 supported by current operations.

8       The GALE code is supported by historical  
9 data from the 1970s and early '80s and this was  
10 one of those things that was a second priority  
11 thing to update, and so there is some clean-up I  
12 think the Commission should consider in going back  
13 and looking at the SRP and guidance sections  
14 because while it can be considered conservative to  
15 build an extra big evaporation pond, it's expensive  
16 when you get to the actual design stage.

17       It is not a design code, it is a regulatory  
18 code but it has design impact.

19       The other questions, I think you know that  
20 Mitsubishi has both standard and risk-informed Tech  
21 Specs, and we are anticipating hopefully using  
22 50.69, special treatment fuel which could save a lot

1 of money in construction from procurement and other  
2 things.

3 As you know, our Tech Spec review was a  
4 catalyst for the staff wanting to re-review the risk  
5 metrics that would be used for new reactors.

6 For us, this is very important. We thought  
7 as a company we were actually fulfilling the  
8 Commission's desire to be more risk-informed, and  
9 seems to now be possibly a delay in our reference  
10 call to review, or we might have to switch later to  
11 standard Tech Specs from the risk-informed Tech  
12 Specs that were submitted.

13 So, I would ask the Commission and the  
14 staff, I know they owe you a paper later in the  
15 year, but an early decision on that would be very  
16 much appreciated so we could take advantage of  
17 those things that are in the regulations today,  
18 which would probably both enhance safety and be a  
19 savings in cost, quite honestly.

20 The last thing is in acknowledgment of  
21 RAIs, I know this sounds simple that we send RAI  
22 answers in and sometimes we don't know if we really

1 hit the mark, but we don't hear back for awhile.

2 That's a simple step that would actually help the  
3 review while we have our technical staffs together  
4 and our groups already kind of queued up.

5 When we don't hear back on RAIs for three,  
6 four, five months and then you get a second round  
7 and realize you missed it.

8 It actually would be better to know you  
9 missed it up front and just help streamline that  
10 process.

11 With that, I am out of time so I will stop  
12 right there.

13 CHAIRMAN JACZKO: Thank you.

14 We will turn to Robert Schrauder who is  
15 Vice President for Licensing at the US ABWR  
16 Project.

17 MR. SCHRAUDER: Thank you, Commissioner.

18 Before I start, I would just like to  
19 address one comment of Frank's.

20 I have been on this side of the table for  
21 over 30 years, and you clearly haven't been here  
22 long enough if we're still referred to as

1 "the dark side".

1 I do appreciate being invited to this  
2 meeting. I have a little bit different perspective  
3 than some of my colleagues, and yet very much the  
4 same remarks.

5 That is Toshiba is even later into the game  
6 than Mitsubishi is, we do not in fact have a design  
7 certification before the Commission now.

8 We do have, however, a letter of intent to  
9 renew the current ABWR Appendix A to Part 52.

10 This, of course, will be a first of a kind  
11 also because no one has renewed a certification  
12 yet.

13 The very same comments we have, what is  
14 working very well, is communication with the  
15 industry with NRO.

16 We have all said that and I don't think we  
17 should take that lightly, because the communication  
18 issues is what we are told over and over again,  
19 is one of the most important aspect in any business  
20 relationship is communication and the openness of  
21 the communication and the accuracy of the  
22 communication.



1 I believe the communication path in the DCD  
2 process, certification process, and the COLA  
3 process has been outstanding between the industry  
4 and NRO in our case.

5 I hope that NRO feels the same way that  
6 the industry is being very open in our approach,  
7 and I know that NRO is very open in their approach  
8 with communicating with us.

9 There is no doubt in our minds, from my  
10 experience, of what it is that NRO is trying to  
11 communicate, or trying to relay, or what the  
12 question is that they are asking.

13 They're not only clear up front but if  
14 there is any doubt, there are conference calls held  
15 to make sure that we are on the same page with the  
16 communication.

17 The communication is a vital thing that is  
18 working well in the process and should not be taken  
19 lightly.

20 The NRC staff has been open to  
21 industry's position, that is, they continue to  
22 be a very strong regulator.

1           However, where input from the industry on  
2 better things to do things, where it makes  
3 technical sense to go that way,  
4 the staff is open to that, listens to it,  
5 and incorporates it where possible, and that is very  
6 much appreciated.

7           Again staying on the line of the  
8 communication path, the use of NEI, as I will call  
9 it a single point of contact, for the industry  
10 between NRC and the industry, I think has worked  
11 very well, too, where we are able to, when  
12 appropriate, voice our concerns as a body rather  
13 than as an individual entity and that has worked  
14 well and continues to work well.

15           Because we do not have a certification  
16 process right now, my comments really are aimed at,  
17 we don't do certified designs for the sake of  
18 having a certified design, we do it in order to  
19 build a power plant later on.

20           We are in the middle of the backend of that  
21 process, if you will, now.

22           Some of my comments refer to the

1 implementation of the certified design once it is  
2 in place and where we think there are some  
3 improvements there.

4       One is this issue of finality, of what  
5 constitutes finality from the certified design.

6       NRC management, and frankly their project  
7 managers, seem to have this concept grasped very  
8 well.

9       Some individual reviewers may need a little  
10 bit more training in this area.

11       We feel a lot of times that the applicant  
12 is on the defensive to push back on that question  
13 has been covered in the certification process and  
14 really isn't open in the COLA processes.

15       So, the concept of finality would be one to  
16 reemphasize and to watch carefully as questions  
17 come out on the COLA process.

18       One that, for me, has been a very  
19 challenging issue is the treatment of codes and  
20 standards in the certified design.

21       We are dealing right now with a certified  
22 design that is 15 years old coming up for renewal,

1 the codes and standards that are referenced in that  
2 standard design are 15 to 20 years old.

3 As we certify that -- or renew that  
4 certification for another 15 years, an applicant  
5 who applies for an application under that certified  
6 design may be dealing with codes that are 40 years  
7 old.

8 The process of updating to new codes and  
9 standards is onerous, difficult. You can update the  
10 codes, everybody will acknowledge that it is a good  
11 idea to update to more recent codes and standards.

12 The process of reconciling those codes  
13 between the code that was certified and the code  
14 that is current, is very costly.

15 It is a very cumbersome process to go  
16 through. I would think that there ought to be a  
17 regulatory process that makes it much easier to  
18 upgrade to current approved codes and standards  
19 without having to go back and reconcile all of  
20 those codes against the codes that were certified  
21 in the original design.

22 It makes our process easier, it makes

1 sense, almost all of these reconciliations come  
2 out it is okay to use the current design.

3 It is the industry standard design.

4 I think we have work to do on verbiage in  
5 the rule on how you apply codes and standards.

6 The one process that I don't think was  
7 anticipated is because we are dealing in  
8 rulemaking, because the appendixes are rules, the  
9 process of making any change to the certified  
10 design is a bit more cumbersome in that not only do  
11 you have to get it reviewed and approved, maybe  
12 from a license amendment perspective, but you also  
13 have to go through a rule exemption process to take  
14 an exemption from the rule because it is a  
15 certified design.

16 My overall opinion is the process is  
17 working very well, the staff continues to work very well with us,  
18 and we appreciate that.

19 Thank you.

20 CHAIRMAN JACZKO: Thank you everyone for your  
21 presentations.

22 We will start with Commissioner Svinicki

1 for questions.

2 COMMISSIONER SVINICKI: Thank you all for your  
3 presentations.

4 I want to start out by saying that I think  
5 all of you have acknowledged aspects of the process  
6 and the system that are working well, and I think  
7 that is a part of the discussion that frequently  
8 gets lost.

9 I appreciate your acknowledgement of that.

10 That being said, the real opportunities in  
11 having this kind of meeting and hearing from all of  
12 you is to focus on the areas where you indicated  
13 that there might be some challenges.

14 I do want to acknowledge up front the many  
15 positive statements you've made about how far we've  
16 come around, the learning curve, and the things  
17 that are going right.

18 I would start out with a comment about  
19 rulemaking, some of you have talked about that.

20 I was thinking about it in preparation for  
21 this meeting because in my work as a Commissioner I  
22 encounter and work with the NRC staff a lot on

1 rulemaking, but the interesting thing here is that  
2 rulemaking in and of itself when NRC undertakes a  
3 rulemaking it's a complicated process. We have to  
4 develop our technical basis go through all of the  
5 administrative steps to do rulemaking, and here  
6 rulemaking is the final step in what was already a  
7 very complicated process.

8       You conclude with something that in and of  
9 itself I think will be a significant step to get  
10 through.

11       So I think if some of you are expressing the  
12 beginnings of some anxiety about it, I would say  
13 that's healthy, I think this is not too soon for  
14 the NRC staff and for you to be thinking clearly  
15 about what that's going to look like, and the steps and the  
16 timelines for doing that.

17       I actually am very comforted that you all  
18 mentioned, or a number of you mentioned that today because  
19 I think that is going to be -- you called it "untested" and, again,  
20 we do a lot of rulemaking so it is not necessarily  
21 untested, but the fact that we conclude these  
22 design certs with rulemaking is something that we

1 are going to need to start thinking about now and I  
2 know we have already been thinking about it.

3 I would also mention thematically, I don't  
4 mean to put words in anyone's mouth, but I think  
5 thematically, I heard from a number of you in your  
6 presentations about issue resolution. There was  
7 discussion of the level of detail required to reach  
8 closure on issues, and this is obviously not just a  
9 topic for new reactor licensing, but it certainly  
10 is something as we confront innovations that you  
11 have proposed in your reactors' designs the  
12 simplest thing to license is the thing that is  
13 already licensed.

14 I think there has probably been a little  
15 bit of dynamic between how much you want to  
16 innovate and how much regulatory uncertainty that  
17 might pose for all of you.

18 I would ask you if any of you want to  
19 respond, generally on are we trending towards  
20 better communications, most of you were favorable  
21 about your communications with NRC staff, so now I  
22 am getting to the very narrow slice of the

1 regulator communicating to you specifically what it  
2 takes to close issues. We talked a little bit about  
3 RAIs. Mr. Gillespie was mentioning you might not  
4 hear back in your response to an RAI until you get  
5 another round and then you find out you know what I guess I  
6 didn't understand what was being asked there quite  
7 as well.

8       Certainly what comes to mind, I don't mean  
9 to pick on the AP 1000, but there had been a lot of  
10 public interaction now about the shield building  
11 issue and in terms of coming to closure on that, I  
12 am wondering if that presents any lessons to talk  
13 about in terms of how can we come to understand  
14 early on that there is a significant issue that  
15 might require testing, it's going to require a lot of  
16 man-hours to resolve.

17       That is something that folks looking at NRC  
18 and looking at the designers from the outside in  
19 say to themselves, that is the learning curve that  
20 the regulator and the applicants need to come up is  
21 this issue of communicating these issues and  
22 closing them because that is going to create the

1 greatest jeopardy to the predicted schedule.

2 I've laid a lot out of there, I don't know

3 if any of you want to respond.

4 MR. RUPPRECHT: Since you mentioned AP 1000, I

5 feel compelled to at least chime in here, I would say

6 first of all your question is about, is it trendy and I

7 would say clearly very positively.

8 And the lessons learned are both for the

9 applicants and for the agency.

10 The part of communication that often is the

11 weakest in people, is listening.

12 We often confuse, I'll master the obvious

13 here, communication with a lot of thought

14 discussion.

15 I would say certainly for Westinghouse,

16 if we look at the shield building, there is

17 clear element of listening.

18 Very clearly to the staff and certainly the

19 staff is in their regard they've improved their

20 listening as well.

21 So that we can come to convergence on what

22 is going to be required here.

1           It is trending in the right direction and  
2 my lesson learned for everybody would be, don't lose  
3 sight of the fact that listening is such a critical  
4 element of communication that often gets overlooked  
5 and gets confused, just because we've talked a lot  
6 we've communicated.

7           COMMISSIONER SVINICKI: Did anyone else want to  
8 comment on either RAIs or other issue resolution?

9           MR. GILLESPIE: I would say it is trending  
10 positive, but there is a tendency for a lot of us to get  
11 caught up on the same issues that are affecting operating  
12 plants. If there is an unresolved issue, at least for us,  
13 it's still the sumps. We're working with the staff on that.

14           As it ends up, our unique feature which is  
15 passive accumulators did not seem to be a major  
16 review issue as a design feature.

17           We did find that the staff had questions on  
18 our methodology late.

19           That is because our methodology didn't get  
20 reviewed early.

21           I understand the reason for it, but it does  
22 present a challenge when you don't get an earlier

1 identification of the staff's major question.

2 The issue resolution for us is things like  
3 sumps, which is common across many plants.

4 The more generic issue of risk application,  
5 risk criteria, Reg. Guide 1174 as it might be  
6 applied to new plants, and getting that  
7 question settled.

8 It is not necessarily unique questions, it  
9 is more generic questions.

10 They seem to linger forever.

11 COMMISSIONER SVINICKI: Thank you.

12 Thank you, Mr. Chairman.

13 COMMISSIONER MAGWOOD: I think it was Mr. Sliva  
14 that said that all of the questions that have been asked,  
15 have been within the bounds of the regulations and that is a  
16 a pretty comforting thing to hear.

17 I just wanted to ask the other four of you,  
18 is that your experience, do you feel comfortable  
19 that all of the questions that you are being asked  
20 are within regulation, or within the guidance?

21 MR. RUPPRECHT: Absolutely.

22 MR. HEAD: Yes.

1 MR. SCHRAUDER: With the exception of the comment  
2 I made on finality, I would say yes, we have gotten some  
3 questions we think should not have been asked and were  
4 covered within the certification process.

5 COMMISSIONER MAGWOOD: Does that speak more to  
6 the level of detail, or does that speak to the actual  
7 nature of the question?

8 MR. SCHRAUDER: I think it goes to the nature of  
9 the question and it hasn't been rampant or a real big  
10 issue, just occasionally it pops up.

11 COMMISSIONER MAGWOOD: On the question I think  
12 many of you brought up, which is the level of detail, I  
13 would like to give you a chance to philosophize about this  
14 a bit further.

15 Maybe Mr. Gillespie might have the special  
16 insight to this, how do you think the agency should  
17 approach the question of level of detail?

18 MR. GILLESPIE: I think Mitsubishi was a bit  
19 unique in that we came in with basically and essentially  
20 for the purposes of regulation an essentially complete  
21 nuclear island design done for the U.S. market, but done  
22 in Japan and level of detail has actually -- of design has

1 not been an issue with us.

2       It's actually been analytic techniques --  
3 seismic we used a spring analysis, the staff prefers a  
4 elastic analysis.

5       Our questions have been generally  
6 methodology in nature and not design in nature for  
7 the most part.

8       I haven't had to face that issue because  
9 Mitsubishi did have -- because they are both a  
10 constructor and designer and a fabricator in Japan,  
11 they actually had a significant level of design for  
12 the primary circuit in the nuclear island  
13 completed.

14       They're going to fabricate the components  
15 themselves for most of the primary circuit.

16       It just wasn't an issue with us.

17       COMMISSIONER MAGWOOD: Would anyone like to  
18 comment on that point?

19       Perhaps, we could pick on Westinghouse  
20 again.

21       MR. RUPPRECHT: It is much easier to talk about  
22 it than to come up what you do about it, quite honestly.

1           It is really quite a challenging issue, we've  
2 seen a lot of inconsistency from reviewer to  
3 reviewer so it does become an individual aspect.

4           I think part of the approach to it really  
5 has to be early communication such that the agency  
6 can then as clearly as possible outline that  
7 reasonable assurance well in advance and there  
8 could be good at dialogue about whether that is  
9 acceptable or whether that makes sense or not.

10          The Devil is in the detail here.

11          I think it goes back to communication where  
12 we have gotten early on having those dialogs and  
13 listening to each other.

14          I think we have had much more success in  
15 that.

16          I do sense at times and I will echo one of  
17 my colleagues that this level of detail concept  
18 that my counterparts and some of their staff seems  
19 to be very well grasped and understood. As you get  
20 farther down into the individual reviewers, it  
21 gets -- there is a lot of disparity in views there.

22          That becomes a management issue of how best

1 to make sure that the right issues are being tabled and  
2 brought up and you manage it appropriately, but not  
3 to the extent that it takes on a life of its own.

4 If I have to reflect back on the NRC I  
5 dealt with 25 or 30 years ago, in contrast -- the  
6 one contrast I make we were talking about it at  
7 breakfast was, 25-30 years ago they were seeing a  
8 much more of a willingness of NRC management at the  
9 appropriate time to step in and say we think this  
10 is reasonable assurance.

11 It could be as we have had turnover of  
12 personnel, we've evolved, etc. that some of that  
13 management discipline is much harder to implement  
14 today.

15 MR. HEAD: I would like to follow up on that  
16 because I've seen some of the same things Sandy reflected  
17 upon there.

18 One other aspect that needs to be put on  
19 the table here is as we have gone further through the  
20 process and we have fewer and fewer issues that  
21 we're dealing with, the management attention is  
22 outstanding.

1           We are getting those kinds of things  
2 resolved quickly.

3           I think that part of it was being so  
4 overwhelmed with so much stuff at the beginning  
5 that you couldn't, we couldn't either, focus on the  
6 the things we needed to focus on.

7           Here is one reviewer that is going off into  
8 a level of detail that is not necessary.

9           We were unable to service that even internally  
10 as a vendor and get it back in front of the staff.

11          As we have gotten down to fewer and fewer  
12 issues it's becoming manageable to some extent.

13          We are seeing the right things happen, it  
14 just took a little longer to get there than what we  
15 obviously would've hoped.

16          COMMISSIONER MAGWOOD: Thank you very much.

17          Thank you, Mr. Chairman.

18          COMMISSIONER OSTENDORFF: I have a question for  
19 Mr. Head and then I will ask others to comment.

20          On one of your lessons learned bullets,  
21 you talk about the process for handling evolving  
22 regulatory requirements and guidance needs to be

1 more clear.

2 I wanted just to see if you had any  
3 specific recommendations for the NRC in that  
4 particular area.

5 MR. HEAD: That is one of the areas in which we  
6 saw things happen and was brought up on the sump issue, that  
7 is an evolving regulatory issue, it didn't necessarily  
8 affect our plant but it is something that is out there.

9 You hear about it, they're things going on  
10 there, we see it in the cyber security it was an  
11 evolving technology, it was an evolving regulatory  
12 basis.

13 I am not sure how you solve it necessarily  
14 other than work together.

15 I think that has happened.

16 I think we have worked well with the staff  
17 in that area especially in the cyber security, but  
18 it is something that is going to happen going  
19 through this process. It is going to happen when  
20 you go through the COL process even years down the  
21 road.

22 Things will come up and we have to have

1 jointly a venue with which we discuss those things  
2 openly, it all goes back to communication.

3 This is the direction we're going to have  
4 to go, this regulatory issue is going to drive  
5 changes to what we're doing here. Let's all get on  
6 board and make sure we are moving in the same  
7 direction.

8 The key thing is just the communication.

9 COMMISSIONER OSTENDORFF: Do the others want to  
10 comment?

11 MR. SLIVA: I agree with Jerry's comment and we  
12 are solving some of these broader issues but it's almost  
13 in an ad hoc forum, there is no set process for resolving  
14 issues with evolving regulatory guidance.

15 We have approached the staff, we have  
16 worked on resolution, but it is almost the first of  
17 a kind process every time it comes up.

18 Some of that is understandable because as  
19 issues arise, as technology advances, and as  
20 regulations need to expand to embrace the  
21 differences in evolving technology, I think some of  
22 that is understandable but if we could work

1 together or assist in some way of coming up with a  
2 more formal process of communicating that interim  
3 staff guidance, and then have a more or less  
4 general template of how the industry is expected to  
5 respond at least in preliminary fashion.

6 It might be helpful rather than approaching  
7 each issue as a first of a kind event, which is  
8 working, but I think on both sides, it takes a lot  
9 more effort than perhaps it could take as we move  
10 down the road.

11 COMMISSIONER OSTENDORFF: Any others want to  
12 comment on that?

13 Mr. Sliva, I wanted to ask you one second,  
14 question. In your areas for attention slide, you mentioned  
15 the common understanding of the path to close issues as  
16 kind of a follow on to this first question.

17 Is there anything in your company's  
18 international experience dealing with international  
19 foreign regulators that you would like to bring  
20 to the attention of the NRC that might be something  
21 for us to look at, or at least be cognizant of?

22 MR. SLIVA: I think from an international

1 perspective several of my colleagues also have plants  
2 under construction, we have plants in construction in  
3 Western Europe as well as in China.

4 Two observations, I think the MDEP process  
5 is working and is balanced fairly well.

6 We have seen no adverse impact on the U.S.  
7 design from MDEP interactions, and in some cases it  
8 actually has provided clarity as to an approach we  
9 should be taking to more crisply satisfy U.S.  
10 regulations.

11 The concern that we would have is that  
12 there doesn't appear to be any clear process right  
13 now under Part 52 to easily take advantage of  
14 lessons learned from the plants that are being  
15 constructed.

16 The European plants and the Chinese plant,  
17 which is a European design meeting Chinese  
18 regulatory standards, are close cousins to the U.S.  
19 design and it may be sometime advantageous to be  
20 able to take lessons learned in either  
21 constructability on commissioning and testing, and  
22 implement them in a relatively quick fashion into

1 the U.S. design to enhance the overall safety of  
2 the plant.

3       Based on lessons learned from the European  
4 experience, right now we don't see within AREVA a  
5 clear path on how to make that happen in an  
6 expeditious fashion that could be a benefit to us  
7 all and while we are not there yet, necessarily, as  
8 the plants going to commissioning over the next  
9 couple of years, we expect to find out things that  
10 could be advantageous for the American design and  
11 that would be our one concern right now.

12       No very clear path forward for  
13 incorporation of lessons learned based on worldwide  
14 experience as they may be applicable to the U.S.  
15 design and the U.S. plant.

16       COMMISSIONER OSTENDORFF: Thank you.

17       Thank you, Mr. Chairman.

18       CHAIRMAN JACZKO: I think I would just add a  
19 couple of points.

20       I think mostly comments, I don't know that  
21 I necessarily have questions at this point.

22       I think, Mr. Sliva, on your last point, I

1 would say Part 52 is designed to do that. I think  
2 one of the reasons we're having trouble with that  
3 is because we're doing the design certification and  
4 the COL work simultaneously.

5 Part 52 does require -- and we had some  
6 Commission discussion about this very point a  
7 couple of years ago, to the extent that we would  
8 require operating experience and I guess you could  
9 extend that perhaps to construction experience, to  
10 be incorporated into a COL application and that was  
11 something that applicants needed to address is  
12 how they were dealing with operating experience and  
13 you had that and I believe in the end we put some  
14 language in Part 52 to do that.

15 Balance that with where the Commission also  
16 wants to go which is to minimize changes, that is  
17 the whole idea.

18 To some extent the system is designed to  
19 not do what you're saying, because we want a stable  
20 design, we want a stable process, and we want  
21 standardization.

22 Certainly things that are enhancements from

1 a safety standpoint that are significant, we have a  
2 mechanism, we also changed Part 52 to allow for  
3 amendments to design certifications to try and  
4 address that.

5 There is that constant balance between  
6 wanting the design to be finalized, wanting there  
7 to be standardization, and always wanting to tinker  
8 and tweak.

9 There's a fine line between those things.

10 I think it is very good point is one that  
11 the Commission has struggled with a long time  
12 to figure out exactly what the sweet spot is and  
13 where you modify things and where you don't.

14 One of the things I think I heard from  
15 maybe mostly from Frank is addressing an important  
16 policy issue that we will have to look at, and that is  
17 what are we going to do about the risk metrics that we use for  
18 new reactors?

19 I think that is a good issue that the  
20 Commission needs to take a look at. I think the  
21 staff had proposed about a year ago a paper to  
22 generally look at a framework that is something we

1 may want to come back on and re-examine where that  
2 is and what we need to do.

3 That does certainly factor into the risk  
4 informed Tech Specs.

5 If we are using the same kind of risk  
6 metrics for plants that have -- if we believe your  
7 CDF numbers that have core damage frequencies which may be one  
8 or two orders of magnitude lower than the current  
9 fleet of plants, the risk deltas if we go with  
10 current guidance right now, then by and large very  
11 few -- I guess I'll say it another way, the risk  
12 levels would be so low we are looking at the risk  
13 deltas as a fraction of CDF then we are looking  
14 at very small changes from a risk perspective that  
15 may require a higher degree of regulatory review, where  
16 for a plant with a higher CDF, that may not necessarily fall  
17 into a risk significant category.

18 I think that is something we will have to  
19 grapple with and figure out what the right approach  
20 is, and I don't know what it is and I think whether  
21 we will have a whole new risk level for the new  
22 reactors and whether we will take the risk levels

1 for the existing plants and build off a system from that.

2 I think that is a very good issue to look  
3 forward for the Commission as we look at the things  
4 that we have to do, and that it is having an impact on  
5 the design cert. is something that is new to  
6 me.

7 On the rulemaking, I think it is certainly  
8 good, as Commissioner Svinicki said, a good one for  
9 us to be thinking about now because that will be  
10 the way we wrap this process up.

11 We do have some experience with design  
12 certification rulemakings. I think in 2005 I had a  
13 chance to vote on the final rule -- I think both a  
14 draft and a final rule for the AP 1000 when we  
15 originally certified it.

16 I think it is a process we do understand  
17 fairly well, but I think it is good to hear the  
18 feedback about that issue.

19 The last issue I will touch on, I think a  
20 lot of the issues you brought up are very good  
21 issues, certainly ones I think folks sitting to the  
22 left of me, Bruce and Mike and Dave Matthews and

1 the folks in the audience, in many ways they are  
2 the audience for a lot of those comments.

3 I think to some extent the specific things  
4 you are talking about are very much management  
5 issues that the staff is looking at, and I think it  
6 is good feedback and as I talk to the staff and  
7 help them work through these issues I think they  
8 are aware of these challenges.

9 In particular, some of the staffing issues  
10 there is only so much we can do. At some point we  
11 can't always require people to stay in certain  
12 jobs, but I think it is good feedback to the extent  
13 that we can, that we want to see some stability in  
14 those areas as we go forward.

15 I thought I would try and close with a  
16 question, we have a panel -- the next panel we'll  
17 hear from is perhaps another generation of folks  
18 that are going to be going through design  
19 certification process and if each one of you have  
20 had one piece of advice for them as they go through  
21 that process, what would you give them in terms of  
22 how they can go through this process easier than it

1 has been for you.

2 MR. HEAD: I would say define your schedule and  
3 scope as early as possible, jointly with the NRC, make  
4 sure that your communication lines are truly open, set up  
5 a rhythm there that you have to go through with your  
6 project managers to discuss issues, get those things  
7 vetted as quickly as possible, keep jointly a good  
8 schedule on what you're trying to get done.

9 That is key.

10 MR. GILLESPIE: I would say get your  
11 methodologies approved well in advance.

12 That way you are focusing on the design and  
13 not how you are calculating things.

14 CHAIRMAN JACZKO: Thank you very much, we  
15 certainly appreciate your comments and insights, and I  
16 think it is very helpful for us to hear them.

17 I think by and large certainly what I heard  
18 was good news that everyone is working well and  
19 making good effort to do their collective  
20 responsibilities and there are certainly areas  
21 where we can make improvements and enhancements.

22 I appreciate your comments.

1 Thank you.

2 We will now go to the next panel.

3 We had a very good discussion from folks  
4 who are in the middle of the review process. Now I  
5 think we will hear from folks who are beginning to  
6 think about or embark upon the process of design  
7 certification for a slightly different type of  
8 reactor technology.

9 So, I think we will have an interesting  
10 comparison, and perhaps you heard some good  
11 feedback and good advice as you embark on this  
12 endeavor.

13 We will start with Richard Black who is the  
14 Assistant Deputy -- Associate Deputy Assistant  
15 Secretary for Nuclear Power Deployment in the  
16 Office of Nuclear Energy.

17 Mr. Black?

18 MR. BLACK: It is a pleasure to be here.

19 I submitted a bunch of slides for the  
20 records, but I really want to move higher level  
21 than the slides.

22 Basically, just explain how DOE got here to  
23 have a small modular reactor program and advanced  
24 reactor program and what we are doing about it,

1 what do our budgets look like, and where we intend  
2 to go.

3 Certainly within that mix there is an awful  
4 lot of interactions with industry and NRC that need  
5 to be undertaken, I do want to hit upon those as  
6 highlights.

7 Basically, and I think even Commissioner  
8 Magwood knows we've been looking at small modular  
9 reactors and advanced reactor concepts for a long  
10 time.

11 I have your 2002 report on my desk on small  
12 modular reactors.

13 Basically, in those days, the fundamental  
14 focus of DOE's small reactor program was in the  
15 international market.

16 We believe there was certainly a market  
17 internationally for small modular reactors for all  
18 of the reasons, grid size, isolated areas, what  
19 have you.

20 Over the last couple of years, starting  
21 with conversations with the Department of Defense  
22 looking at energy security issues, mission critical

1 issues DOE started looking at the small modular  
2 reactor designs those that are going to be manufactured  
3 here in the United States.

4 We talked with vendors, we talked to end users. We  
5 talked to DOD and we became convinced that there  
6 was a need and a market commercially here in the  
7 United States for small modular reactors.

8 We embarked upon a program that talked even  
9 more and we have been engaged with NRC in those  
10 discussions with vendors and end users, and we became  
11 convinced we needed a small modular reactor program  
12 and an advanced reactor concept program.

13 And really kind of shifting from the international market to  
14 the domestic market and taking a look at the needs  
15 at that point.

16 Right now, beginning in fiscal year '11 we  
17 have requested a budget of -- and the slide shows,  
18 it is basically a budget of \$39 million for small  
19 modular reactors and \$22 million for the advanced  
20 reactor concept.

21 Basically, it's an advanced reactor concept  
22 office which I'm the director of that office

1 now.

2       Again, that is a budget request we're going  
3 through budget hearings right now, but right now we  
4 think that the budget for both of those programs is  
5 fairly firm up on the hill.

6       As you all know, as we all know from reading the trade  
7 press, small modular reactors is a hot item now.

8       But we don't want to lose sight of the fact  
9 that we have a higher priority which is the first  
10 movers of the last panel that was up here.

11       DOE's programs really -- the small modular  
12 reactors and the advanced reactor concepts are a  
13 lower priority to the first movers at that point.

14       Still, the budgets are healthy and we've  
15 established within the small modular reactor office  
16 some priorities and really the first priorities are  
17 based on market.

18       What we have looked at is the range of  
19 vendors and we've looked at the range of markets  
20 and we feel that we need to establish a program  
21 that really helps the first movers get to market.

22       In all of these discussions in all of the

1 ways we look at DOE programs, we really have to  
2 discern the appropriate role of government vis a vie  
3 industry.

4 Certainly with all the budget that we have  
5 right, OMB and Congress really looks at the issue  
6 of the appropriate role of a government program  
7 versus what is the appropriate role for industry.

8 We are going to embark upon some  
9 discussions later, we are going to have a  
10 conference that will follow on the tail end of the  
11 Plats Conference at the end of June, and we are  
12 going to have further meetings with vendors and  
13 end users and with NRC, and DOD, and NEI, and what have  
14 you to figure out what is the appropriate role of  
15 the government as we embark upon this program.

16 The SMR program is going to, we believe, it  
17 is going to take off first like something akin to  
18 a NP 2010 program.

19 How do we mitigate the first mover  
20 licensing and financial risk?

21 So, the first part of the SMR program for  
22 the higher priority and right now it is

1 focused on the LWR SMRs, because we believe those  
2 will be first to market going through the NRC  
3 licensing process and getting end users.

4 That first program in the SMR program will  
5 be a cost share program with up to two light water  
6 reactor designs and a cost sharing program to cost  
7 share with industry the NRC licensing review fees  
8 for the design certs.

9 I think those design certs will be coming  
10 in within a year, hopefully within a year.

11 We will embark upon that program.

12 Discussions with vendors and end-users will  
13 also shape part of the other program which is an  
14 R&D program for the SMRs.

15 20 million of the SMR budget is for cost  
16 share and the other 19 million is for research and  
17 development of small modular reactor designs that  
18 we think can fit a broad range of advanced reactor  
19 designs.

20 It could be something as simple as I&C  
21 instrumentation, it could be integral primary  
22 reactor system that are inherent in the designs of

1 the LWRs.

2       It could be a range of R&D issues where  
3 government roles are appropriate to help move the  
4 industry forward.

5       That all being said, we do have some other  
6 reactor designs that we are looking at.

7       Obviously the NGNP program, that reactor --  
8 the high temperature gas reactor, could be defined  
9 as a small modular reactor, but the high  
10 temperature gas reactor program -- there is a  
11 second program for that, the NGNP Project, which  
12 has its own separate budget and the R&D for  
13 basically high temperature gas reactors will be  
14 embedded in that project.

15       We have fast reactors, again, fast reactor  
16 programs, sodium cooled fast reactor, molten salt  
17 fast reactor, really our primary emphasis in that  
18 area in recent years has been with the  
19 international programs, the GIF programs the GEN  
20 IV programs.

21       We are looking at -- and again our primary  
22 because of the leverage we get in the international

1 arena is still going to be strong but we are also  
2 looking at some of the domestic designs that may  
3 come to market in a decade or more, so we will be  
4 looking at some R&D programs that will advance the  
5 market strategies for those fast reactors as well  
6 as part of the program.

7 All of that being said, we recognize there  
8 is a need and a market domestically here for the  
9 United States.

10 A lot of that was driven by Department of  
11 Defense needs, and we started talking with the  
12 Department of Defense 2 1/2 years ago, three years  
13 ago and we have now started programs.

14 We have a working group between DOD, DOE,  
15 and Mr. Mayfield, wherever he may be, is part of  
16 that working group too, so there is some high-level  
17 discussions on looking at DOD needs for small modular reactors.

18 Also, we have some projects underway.

19 There may be just a gleam in our eye at  
20 this point but we are advancing this to with the  
21 Office of Science within DOE to look at powering  
22 some of our national laboratory sites with small

1 modular reactors.

2 As I told Dr. Lyons and Dr. Miller, just to  
3 get the Office of Science to recognize nuclear  
4 energy is an option these days, is fairly  
5 significant within the Department of Defense.

6 Even that is an integrated program that  
7 also we will be looking at renewables as part of  
8 the whole energy mix.

9 That being said, I just want to finish by  
10 saying there is a strong commitment by this  
11 administration.

12 You heard the President talk about nuclear  
13 power, you have actually seen Secretary Chu's  
14 remarks in the Wall Street Journal just recently  
15 about the small modular reactors.

16 We are looking at a full range of energy  
17 options within the administration. Nuclear power is  
18 certainly a significant part of those energy  
19 options at this point, and we will advance programs  
20 and advance budgets to support this.

21 Thank you.

22 CHAIRMAN JACZKO: Thank you for those comments,

1 Mr. Black.

2 I will now turn to Christofer Mowry who is  
3 President and CEO of Modular Nuclear Energy at  
4 Babcock and Wilcox.

5 MR. MOWRY: Thank you, Mr. Chairman.

6 I guess we take our invitation here today  
7 as a sign that SMRs have come to age.

8 One thing that I would add to the previous  
9 comments, I think we view SMRs as a complement to  
10 the large reactor concepts and not necessarily as  
11 some type of time phasing follow on technology.

12 In fact, we believe certainly the near-term  
13 focus and interest in industry with regard to SMRs  
14 has to do with the complementary nature in terms of  
15 application that it provides incremental utility  
16 scale power generation, clean power in a way that  
17 is different than the potential applications for  
18 large-scale reactors.

19 In order for this to come to pass, that in  
20 fact, the near-term SMRs really can't be science  
21 projects.

22 They have to be a reformulation of proven

1 LWR technology.

2       When you look at B&W's program, the mPower  
3 program, that's really what it's all about.

4       It's about trying to address some of the  
5 challenges of nuclear power commercialization in an  
6 innovative way, while trying to stay inside the box  
7 from a licensing perspective and a technology  
8 perspective.

9       If you look at the first slide that we put  
10 together, that certainly are the constraints we  
11 have put together to guide the process that we have  
12 going forward.

13       This really very much needs to be a  
14 plug-and-play solution for the industry in order to  
15 achieve the desire for near-term deployment options  
16 for SMRs.

17       One of the signs we are grateful for in  
18 terms of industry acceptance of mPower is the  
19 engagement by the industry. Just a briefing for  
20 some of the new Commissioners, we do have a signed  
21 consortium MOU with four utilities who are  
22 committed to pursue SMR through a series of

1 important tollgates, but nevertheless with a goal  
2 of trying to deploy lead plant SMR, lead plant  
3 mPower before the end of the decade.

4       Clearly, part of this near-term activity  
5 that needs to be focused on is resolution of  
6 selected, and I want to emphasize the word  
7 selected, policy and regulatory issues that are  
8 important to maximize the value and potential of  
9 SMRs as a practical commercial option for an  
10 industry as they look at dealing with the changing  
11 regulatory landscape of vis a vie climate change.

12       We also have a broader industry advisory  
13 council, because clearly the interest in SMRs is  
14 very broad whereas the consortium really deals with  
15 those utilities that have more of a commitment to  
16 pushing this thing forward right now.

17       If you look at the next slide here which the  
18 lead plant schedule.

19       This lays out a path that gets us to lead  
20 plant deployment before 2020, and as we have had  
21 interaction with the Commission and the staff over  
22 the past year, there is continued dialogue about

1 this schedule, we recognize it's aggressive, but we  
2 also do believe and continue to believe that it is  
3 doable and that is because we are very focused and  
4 committed on leveraging the existing GEN III plus  
5 reviews and the solutions and guidance from staff  
6 on matters such as digital I&C and passive  
7 safety.

8         With regard to the activities we have  
9 ongoing right now, we have quite a few licensing  
10 topical reports and other types of interaction that  
11 are planned for the staff this year, actually  
12 submitted the first topical report last month.

13         This is really a representation that this  
14 is indeed a real program.

15         We have more than 100 design engineers and  
16 developers working on this thing dedicated to this  
17 program and this is something that, of course, is  
18 necessary in order for this thing to actually be  
19 deployed on the schedule shared with you on the  
20 previous slide.

21         In closing here, to share with some of the  
22 new Commissioners here, a few slides on actually

1 what this thing is.

2 I noticed in paging through some of the  
3 staff slides here for later on, the new acronym I  
4 guess is IPWR, Integral Pressurized Water Reactor,  
5 and that is really what this thing is, this is a  
6 repackaging of pressurized water -- light water  
7 reactor technology into an integral format that  
8 meets quite a few requirements including, we  
9 believe, the need to shift fundamentally shift  
10 nuclear new build to more of a manufacturing  
11 environment in order to address practical  
12 commercialization requirements while still also  
13 meeting some constraints around providing a utility  
14 scale solution.

15 As you look at a number of these attributes  
16 of the solution, I think you will see that it is  
17 really a compilation, I would call it a best in  
18 class GEN III plus concepts, and I think that is  
19 where the idea of the GEN III plus plus comes from.

20 Finally, I would like to add another slide  
21 that shows the application of this thing. The point  
22 is that these reactors together with their nuclear

1 islands are intended to be fully independent so  
2 that you can truly scale a power plant to local  
3 grid restrictions, low growth demands, and this  
4 type of thing.

5 We also tried to provide a bit of foresight  
6 here that there is some luck involved also to  
7 address some of the issues that have come forward here.

8 One is the environmental issues associated  
9 with water cooling, so the fact that this has a  
10 baseline of an air cooled design is important.

11 Of course, that the entire nuclear island  
12 is underground clearly provides the opportunity to  
13 shift the whole idea of security from a force on  
14 force discussion to a force on concrete, which if  
15 you're going to really go down the path of SMRs you  
16 really need to deal with the whole staffing issue.

17 There is opportunity to be innovative here  
18 and I will just close with saying those are the  
19 areas where collectively I think we need to  
20 interact with the staff and come up with the right  
21 areas to make some adjustments to maximize the  
22 value of SMRs.

1 CHAIRMAN JACZKO: Thank you, Mr. Mowry.

2 I will now turn to Michael Anness who is  
3 the Manager of Advanced Reactors at Westinghouse.

4 MR. ANNESS: Thank you, and it's a pleasure to be  
5 here today.

6 I'm going to speak about briefly,  
7 Westinghouse's small modular reactor plants.

8 As Dick made reference to, Westinghouse is  
9 involved with the NGNP program which is a small  
10 modular reactor, technically, but today I'm going  
11 to focus on our integral light water reactor SMR  
12 program.

13 Westinghouse's plans in SMRs are to provide  
14 our customers with an option so we have a portfolio  
15 of products for customers not only AP 1000.

16 We have been working on a single SMR design  
17 for about ten years now.

18 It started as a DOE program in 1999, from  
19 this period it has been known as the IRIS program.

20 Over those ten years plus of development,  
21 we have actually explored different power levels  
22 and those range from 50, 100, and a 335-megawatt

1 electric design. All of them had a common thread  
2 which is an integral configuration where your  
3 components, which are typically in a loop  
4 configuration for a PWR, are now integral to the  
5 reactor pressure vessel.

6       Very similar to other designs that are  
7 being discussed here on this panel.

8       Current activities for our SMR program are  
9 in the conceptual design phase, so we are -- which  
10 is fairly significant progress in our minds for a  
11 program that is as extensive as these programs tend  
12 to be.

13       As I mentioned with the different power  
14 levels this design has investigated our program is  
15 evolving.

16       Through that evolution, we are capturing  
17 all of our experiences on the AP 1000 program.

18       When we come to the Commission again with a  
19 design certification document, we hope it is  
20 incorporating best practices and any of the lessons  
21 that have been learned in our AP 1000 experience  
22 can be circumvented in our SMR licensing effort.

1           Example of where we are going to build on  
2   our AP 1000 program is, for lack of a better word,  
3   mimicking the documentation associated with an SMR.

4           We would also plan to use extensively the  
5   infrastructure framework that is put in place for  
6   programs such as our safeguards program.

7           Essentially, a DCD for our SMR program will  
8   look more like later revisions of the AP 1000 DCD  
9   then it did the first time around with the AP 1000  
10   program.

11          Westinghouse's SMR program, as it pertains  
12   to NRC engagement, we have been fairly actively  
13   engaged with the NRC in pre-application of the  
14   licensing stage, four, five, five plus years now.

15          We have learned a lot during that timeframe  
16   since 2004-2005.

17          We have discussed issues with the staff  
18   pertaining to phenomena identification and ranking.

19          Emergency management, addressing  
20   differences for SMRs, relative to large LWRs, and  
21   most recently, seismic response for the design.

22          These activities are ongoing and in a few

1 years time, we plan to submit a design  
2 certification document for an SMR.

3 The only reason I qualified that as a few  
4 years time is because there are a lot of variables  
5 that the timeline is dependent upon as we have  
6 learned with our AP 1000 program.

7 We are addressing those variables and  
8 issues now, and we will be working through them.

9 With that, I conclude my remarks and thank  
10 you very much for your time.

11 CHAIRMAN JACZKO: Thank you.

12 We will finally turn to Paul Lorenzini who  
13 is the CEO of NuScale power.

14 MR. LORENZINI: Thank you.

15 As I was listening to the first panel I was  
16 reflecting on what it felt like when I graduated  
17 from college and watched a bunch of new plebs come  
18 in, thinking to myself those guys have no idea what  
19 is in front of them.

20 The NuScale -- the concept we call NuScale  
21 is based on a technology that was funded by the  
22 Department of Energy in 2000 under the DOE NERI

1 program.

2 Part of that program involved the  
3 construction of one third scale integral test  
4 facility at pressure at temperature.

5 That is going to be a real key aspect for  
6 us as we move into the licensing with some slight  
7 modifications to reflect changes we have made since  
8 then.

9 We notified the NRC in 2008 of our intent  
10 to proceed with an application for certification.

11 Since that time we have had four  
12 pre-application meetings, all have been very  
13 positive from our perspective, very well attended,  
14 attentive, lots of good questions.

15 We use those to raise many of the issues  
16 that we believe will be unique for our design, some  
17 of which have already been talked about.

18 We have a number of licensing topical  
19 reports that we are planning to submit, all with  
20 the goal of submitting our certification  
21 application in Q1 of 2012.

22 Our whole focus is commercialization. We

1 are a single focus company. We only have one  
2 purpose in life and that is to commercialize this  
3 plant and take it to market.

4 We are out there talking to customers, we  
5 have good customer interest, we have a customer  
6 advisory board, I think we informed you of  
7 individually five major nuclear utilities and the  
8 interest in SMRs as you know is continuing to  
9 grow.

10 You may know green tech media identified  
11 their number one hot topic for 2009 as modular  
12 small nuclear plants.

13 It is getting a lot of attention.

14 When we have these conversations it all  
15 turns to what you have to do to get through the  
16 regulatory process.

17 We all know that is key for us.

18 We are committed to turning in a  
19 high-quality design certification application, I  
20 know everybody says that, we're going to try to  
21 learn from the experience we have seen from others  
22 what that really means, but certainly it means

1 erring on the side of completion in the design, it  
2 means making sure there is clarity with all the  
3 rules and regulations and how we've met each one  
4 and demonstrating that in our application, it means  
5 an engineering management system that permits easy  
6 access to the underlying design information that is  
7 referred to in the DCD.

8       We also know staffing is going to be  
9 critical to us, so we will have completed a multi-  
10 modular control room simulator prior to submission  
11 of our design certification application.

12       We also know informing a risk informed  
13 design will be important to us so we have already  
14 completed three PIRT panels, we have completed a  
15 Level I PRA.

16       And that has been useful to us both in  
17 terms of the design and in terms of identifying the  
18 systems that require more complete design  
19 information versus other systems.

20       As we go forward we are working with other  
21 industry participants, our colleagues to identify  
22 generic issues and to what extent we want to deal

1 with issues on a generic basis versus some of those  
2 issues may seem generic, but we may feel they are  
3 unique aspects for us and we don't necessarily want  
4 to get our application tied up in a generic  
5 process.

6 We are going back and forth on that inside  
7 of our own halls and evaluating that.

8 That is the approach we're taking and that  
9 is where we stand.

10 So, that will conclude my remarks.

11 Thank you.

12 CHAIRMAN JACZKO: Thank you, I appreciate all of  
13 your comments.

14 As I said, you're in a slightly different  
15 part of the process so I think it is interesting to  
16 hear your perspectives as we move forward looking  
17 at the beginning design certification reviews for  
18 these reactor designs, and we will start with  
19 Commissioner Svinicki for questions.

20 COMMISSIONER SVINICKI: Thank you, I appreciate  
21 the presentations, Mr. Mowry, I was thinking -- I think you  
22 said something along the lines of just the fact that we are

1 here today indicates that we are becoming part of the  
2 dialogue on new reactors.

3 I will give a little confession is that  
4 when I came to NRC, I was not convinced that small  
5 modular reactors were necessarily on the near-term  
6 regulatory horizon for NRC.

7 Two years later, well it's two years later, but I have a sense that there  
8 is the real interest here that a number of you have  
9 talked about, but there is also a real seriousness  
10 of purpose.

11 Mr. Black was talking about how maybe the  
12 motivations have changed over time.

13 There's certainly been, in my experiences  
14 on the Senate Armed Services Committee, some look at  
15 energy security and DOD installations.

16 I think what we are hearing is that as the  
17 nation grapples with our carbon emissions and where  
18 we want to go there it may be that some utilities  
19 are looking to retire older coal units and the  
20 size, so where we thought it was a developing country  
21 issue of the size of grid, here we are looking  
22 maybe to retire capacity and increments that are

1 smaller than our 1000 megawatts or 1500 megawatts.

2       These smaller increments of bringing power  
3 online is something that I think is becoming part  
4 of the national dialogue.

5       There has been discussion about policy  
6 issues and we heard a little bit of it in the panel  
7 that preceded you, but I think it has much more  
8 currency when it comes to the small modular  
9 reactors and the NRC staff has been trying to, at  
10 least, lace informationally some of these issues in  
11 front of the Commission, not with any potential  
12 resolution but just to say what are the regulatory  
13 policies that we need to confront when they look at  
14 small modular reactors.

15       Some of you have made reference to these,  
16 it's everything from staffing levels, defense in  
17 depth, security requirements, things that I hadn't  
18 thought about, source term dose calculations, the  
19 Chairman talked about our risk metrics and things  
20 that we need to look at.

21       Thematically, for those of you -- I used to say  
22 ILWR, I guess it's integral pressurized water

1 reactor so now we are changing our acronym a little  
2 bit, but I think there has been a philosophy  
3 they're saying I want to minimize my regulatory  
4 risk by being as familiar as possible to the  
5 regulator, and where I can invoke familiar things  
6 that are already licensed in the used codes and  
7 standards that are already in use, I'm going to  
8 simplify it for myself. But these policy questions  
9 are not simple for the regulator and I know in  
10 talking to some of you I was looking at this list  
11 of potential policy issues or things where we might  
12 want to shift or pivot the regulatory framework for  
13 small modular reactors, security  
14 requirements was one of those and  
15 I laughed to myself and I thought, the application  
16 of security requirements to the fleet we have  
17 operating now is the source of shall I say a very  
18 vibrant and ongoing dialogue with the operators of  
19 those reactors on a week to week, month to month  
20 basis with the NRC staff.

21 This will be, in my personal opinion, no  
22 small challenge I think for the regulator to be

1 able to innovate. You've said innovation and regulatory risk --  
2 you kind of have to strike the right balance there.

3 For us, if you want to shift in the  
4 regulatory framework we can probably get there, I'm  
5 very optimistic about all of the smart people who  
6 work at NRC, but that will take time.

7 I heard at least one of you say, I don't  
8 want to get my application locked up in a generic  
9 process.

10 To the extent that you can move forward and  
11 be looking across the small modular's, things that  
12 might be common to regulatory approaches based on  
13 technologies that are similar, I don't think we are  
14 going to have a part x for mPower, and a part y for  
15 some other technology.

16 We are going to have to look at what is  
17 common amongst the small modular reactors and as we  
18 try to innovate the regulatory framework we are  
19 going to have to be realistic about what we can  
20 settle and what periods of time based on your  
21 interest in proceeding as an applicant on the  
22 schedules that you notionally are planning for.

1 I would lay that out -- I don't mean it to  
2 be -- I just mean it to be a sober acknowledgement of  
3 something that is going to be challenging. I don't  
4 mean to be downbeat about it that it can't be done,  
5 but I would hope that as a community of potential  
6 applicants you will look at the regulatory staff,  
7 look at NRC, and see what is a slimmer set of  
8 issues that is absolutely essential for your  
9 designs going forward.

10 If any of you want to react, I only have a  
11 little time left, but please do.

12 MR. MOWRY: One comment is we all need to  
13 recognize that all SMRs are not the same and I think we  
14 need to look at some type of functional grouping of  
15 similar designs or similar features that are amenable to a  
16 generic type of adjustments or new rulemaking or whatever  
17 we are contemplating here.

18 The real challenge for SMRs to be anything  
19 more than just an interesting academic exercise is  
20 that they must break that age-old cost scale  
21 paradigm.

22 The innovation of the IPWR, integral PWR, I

1 think that is the start of the innovation, because  
2 that's what let's you simplify the NSSS solution,  
3 and as a result of that, the nuclear island.

4 That creates half of the innovation, but  
5 the other half of the innovation has to be, quite  
6 frankly, on the O&M side, the operation and  
7 maintenance side of power plants.

8 There is two dimensions of that.

9 You mentioned the interest in small modular  
10 reactors as being a retrofit, or back fit, or  
11 repowering solution for old coal.

12 If you look at where old coal is out there  
13 in industry, for that to be a practical solution,  
14 the solution has to be somewhat plug and play in  
15 terms of leveraging existing fuel infrastructure and  
16 that type of thing, otherwise users who aren't  
17 currently nuclear operators are never going to be  
18 up to get there from where they are today.

19 They are, quite frankly, too small.

20 But the other part of it is that we need to  
21 look at where costs have grown over the past several  
22 decades as we've gotten more rigorous in areas like

1 security and other aspects of operating a plant  
2 from a regulatory perspective, and just to pick on  
3 security again, if SMRs -- if the SMR solution is  
4 not inherently secure it will never be deployed  
5 because you simply cannot, I go back to what I  
6 said, you cannot -- the solution cannot be force on  
7 force, you simply cannot -- it is not practical to  
8 have 3 or 400 guards around a 100 megawatt power  
9 plant.

10 Nobody would ever deploy that.

11 The key here is we have to pick and choose  
12 collectively those areas that are high-priority,  
13 but things that are also solvable in a generic way.

14 I think that that is the challenge and the  
15 mandate for us on both sides of the table here to  
16 make this thing work out.

17 COMMISSIONER SVINICKI: Okay, thank you.

18 Thank you, Mr. Chairman.

19 COMMISSIONER MAGWOOD: Thank you, Mr. Chairman.

20 I would like to give a welcome to Dick  
21 Black.

22 I will state for the record that Dick

1 actually came to DOE after I left, so we've never  
2 had the opportunity to work together, but I've  
3 heard very good things about your activities.

4 A question for you, I've recalled during  
5 many interactions that I've had with the Commission  
6 when I was at the DOE, there were sometimes some  
7 complications in the relationship that were caused  
8 by the need for the regulatory side to be independent  
9 of this or developmental side, there was always  
10 some tension there.

11 I just wonder whether you've been  
12 dealing -- how that has been going lately, have  
13 things been going smoothly, have relationships been  
14 going well; just any comments you have on that  
15 front.

16 MR. BLACK: I don't know if I want to touch that.

17 CHAIRMAN JACZKO: There is a right answer to the question.

18 MR. BLACK: There is a tension there, from a DOE  
19 standpoint where our main mission is promoting and  
20 advancing nuclear power, we want to go fast.

21 On the regulatory side there is always a  
22 slow, steady pace that they want to do because of

1 the independent regulatory aspect.

2 Now you are sitting on the other side of  
3 the table, I will ask you this question in about  
4 six months, but recognizing that tension is always  
5 going to be there.

6 I think there is always a way we can work  
7 together and indeed, in this aspect where we are  
8 going to come up with new designs, we have a new  
9 way forward on this.

10 Indeed there are going to be some generic issues  
11 we just talked about security, EPZ planning, or risk-informed  
12 approaches to safety analyses, which are going to  
13 be innovative approaches that will test the  
14 framework of the regulatory process, but we are  
15 fundamental believers that the regulatory process  
16 and framework is there that we can work together.

17 The Part 52 process has been proven and it  
18 will be used in these processes for SMRs and  
19 advanced reactor concepts.

20 It is proven, we can march forward under  
21 that umbrella of that framework.

22 I think one of the things we have to do

1 between DOE and NRC is we have to talk frequently,  
2 and we have to get the issues on the table in a  
3 very forthright manner and also we have to look at  
4 different ways that we can apply DOE resources to  
5 help you in your regulatory framework.

6 I will just throw this out, one of the  
7 things we talked about, recognizing that we have  
8 limited resources, the capability in this nuclear  
9 engineering science field is limited, the pipeline  
10 is scarce right now and there's going to be a lot  
11 of demands for that talent that does come out of  
12 that pipeline and existing talent.

13 Recognizing that we have a wealth of  
14 resources in our national laboratories in DOE.

15 There may be a way that we can firewall off  
16 a national laboratory resource and help in some of  
17 these regulatory reviews for advanced reactor  
18 technologies, we can apply Brookhaven national  
19 resources to help you on fast reactors and put a  
20 firewall there, so that your independent regulatory framework is  
21 not jeopardized by that.

22 I think the process is there, the framework

1 is there, I think the willingness is there to  
2 relieve those tensions and move forward with these  
3 new designs.

4 COMMISSIONER MAGWOOD: Thank you very much.

5 That's an interesting comment, I'd like to  
6 discuss that with the staff at some point.

7 A question for the industry  
8 representatives here, one of the things that occurs  
9 to me in looking at the small modular reactors is  
10 they are much more manufactured than they are  
11 constructed on-site.

12 I wonder if we are seeing a shift in  
13 paradigm here between construction to manufacturing  
14 that may actually have some broader implications  
15 for the regulatory approach that we take to this in  
16 a longer term.

17 Should we be thinking more about the  
18 factory than we do now, for example.

19 I wonder if you have any thoughts in that  
20 direction.

21 MR. LORENZINI: That is a question we have asked  
22 ourselves, and we thought somebody on the other side of

1 the table might start asking that question.

2 On the one hand, yes, there is a shift to  
3 the factory.

4 On the other hand, I was at Curtiss Wright  
5 and saw an AP 1000 main pump that is being  
6 fabricated and it is not a whole lot different in  
7 size and complexity than our module.

8 So, our view and our approach has been we  
9 ought to be able to qualify vendors for the  
10 manufacturing of our systems and components the  
11 same way that is being done for the conventional  
12 plants and our expectation is that even though the  
13 words might be different and function might be  
14 different, the scope and complexity of the  
15 manufacturing we don't expect to be much different.

16 COMMISSIONER MAGWOOD: Thank you, Mr. Chairman.

17 COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman

18 I want to get back to the comment, Mr. Black,  
19 you made about trying to look at the market  
20 domestically for the SMRs, and I'm mindful of the  
21 question that Commissioner Svinicki had and Mr.  
22 Mowry dealt with the regulatory policy issues

1 for SMRs, the force of concrete, the staffing,  
2 emergency management, those other issues.  
3 I'm trying to understand from a business  
4 standpoint for potential utilities or whoever the  
5 end-users may be, could be the Department of Defense  
6 and I certainly was at NNSA a couple of years ago and  
7 there's some discussions about reactor for power  
8 purposes at NNSA national laboratories so I'm familiar with that context.

9 I'm trying to understand at what point in time  
10 does there have to be sufficient granularity and  
11 clarity on the potential regulatory policy  
12 framework, what the rules may be in order for there  
13 to be well-informed decisions made, is this  
14 economically viable for 125 megawatt, or let's say a  
15 couple of those put together to provide a  
16 500-megawatt generating capacity in a particular  
17 part of the country?

18 Is there a timeline you had in mind, is  
19 there a vision that lays this out with some natural  
20 chronology?

21 MR. BLACK: I think Chris mentioned it, the huge  
22 paradigm that one had to get through is this economies of scale

1 notion.

2       When we started looking at SMRs, the cost  
3 analysis was really the one that eluded us for a  
4 while.

5       Can we show potential end users that these smaller designs  
6 will be comparable in a cost basis, dollar for kilowatt basis?

7       We weren't convinced, we thought the  
8 economies of scale argument trumped that.

9       Until we started talking more to the  
10 vendors and we found out that there were certain  
11 aspects of the smaller designs that would lead to  
12 smaller construction costs or fabrication costs, but  
13 recognizing that's still a big issue to the  
14 end-user.

15       I just talked to some nuclear utility  
16 executives a couple of months ago and they said  
17 this is still an issue.

18       We don't know what those cost estimates are  
19 going to be.

20       One of the first things we're going to do in DOE, in fact  
21 we have already commissioned Argonne National Lab to start doing  
22 this is doing another cost validation model.

1           Let's take a look at a range of these new  
2 designs and concepts coming down the pike and let's  
3 figure out if there's a way we can do an  
4 independent cost estimate of those and there is a  
5 bunch of international studies too that look at  
6 this.

7           The cost figure, the cost analysis is  
8 something we are looking at and we will provide a  
9 model that will provide a validation of those  
10 costs.

11          Yes, it was a hurdle, it's a hurdle for  
12 everybody.

13          The money talks in these things.

14          COMMISSIONER OSTENDORFF: Would others like to  
15 comment on that?

16          MR. LORENZINI: I think we've all known that it's  
17 a part of the nuclear DNA, big is cheaper.

18          When we started out, we understood that the  
19 critical issue for us is demonstrating we can build  
20 the plant this size that is economic, and from our  
21 perspective it is not the size of the module  
22 accounts, it's the size of the plant.

1           If we're going to build a 540-megawatt  
2 plant it is the economics of a 540-megawatt with 12  
3 modules, or a 270-megawatt plant with six modules.

4           We knew that we had the history of cost  
5 estimates that have grown over time, and we  
6 suspected that when we went to the marketplace we  
7 might give very attractive numbers but nobody would  
8 believe us.

9           We have a contractor that we have worked  
10 with and we have developed a pretty detailed design  
11 basis on which we could develop cost estimates and  
12 so we think we can go to the marketplace with some  
13 pretty solid estimates of our cost that have  
14 demonstrated that we can make our plant  
15 competitive.

16          One of the things we tell people is if you  
17 take a plant and you scale that plant up, the  
18 economies of scale start to work.

19          But, if you start with a clean piece of paper  
20 and you say how do I capture the benefits, the  
21 economic benefits of making a small plant, call it  
22 the economies of small, how do I capture those

1 benefits, you come up with a different kind of  
2 design.

3 That's what we think we've tried to do.

4 MR. MOWRY: I guess our view is that four SMRs to  
5 maximize their promise and potential especially in a  
6 repowering of old coal, they need to be economically  
7 viable in the 150 to 250-megawatt range.

8 Quite frankly, if you look at the  
9 subcritical plants that were built in the '50s,  
10 those are the ones that need to be shut down,  
11 they're in the 150 to 250-megawatt range.

12 I think the equation relative to cost, and  
13 again I want to separate the construction cost  
14 piece and THE operating cost.

15 As Dick mentioned the goal with SMR is not  
16 to have a step change improvement in the  
17 construction cost, it needs to hold the line while  
18 improving the scalability and cost certainty and schedule certainty.  
19 By manufacturing in a factory you create a lot more  
20 cost certainty around NSSS than a field  
21 construction that is part of the value of this  
22 thing.

1           So, to get back to your question  
2   Commissioner, in terms of the timeline of  
3   resolution, there's two pieces of that question and  
4   one is the timeline for resolution of issues  
5   associated with cost certainty on construction.

6           To the degree that we can maintain, I will  
7   call it, functional equivalence to existing GEN  
8   III, GEN III plus plants, we believe that the  
9   analysis we have done on the construction side is  
10   reasonable and I think there is a reasonable  
11   comfort level in industry that that number is where  
12   it needs to be and that we understand it.

13           We're not introducing new functional  
14   concepts in terms of the overall architecture of  
15   the plant.

16           It's light water reactor, it is based on the  
17   features and functions aren't significantly  
18   different.

19           The real question comes again into the O&M  
20   side of the equation and that is where security,  
21   control room staffing, I think we have identified  
22   to the staff about a half a dozen issues most of

1 which are generic, there are a couple that may not  
2 be generic but they may not require rulemaking as  
3 much as an understanding.

4       Again, I go back to security, the fact that you  
5 have an underground nuclear island, how do you  
6 design that to optimize this force on concrete  
7 concept.

8       I don't know that you -- that's more of an  
9 understanding of the requirements and how they are  
10 applied in this situation.

11       That is the piece that needs to get nailed  
12 down before you actually start building a plant.

13       The good news is that is a little bit  
14 further out there.

15       I think we have two or three years to get  
16 that part solved.

17       The part that has to be nailed down in the  
18 shortest -- short time in order to maintain the  
19 kind of schedule I shared with you is really the  
20 matters that are related to the design itself associated with construction.

21       The degree we can maintain discipline  
22 in focusing on functional equivalence to GEN III,

1 GEN III plus solutions, that is going to be the key  
2 collectively to maintaining this on a track that  
3 creates near-term options for industry relative to  
4 the climate change solution.

5 COMMISSIONER OSTENDORFF: Thank you, Mr. Chairman.

6 CHAIRMAN JACZKO: As Commissioner Ostendorff and  
7 Commissioner Svinicki touched on, I think the issue -- an  
8 important focus for the Commission going forward is to try  
9 and figure out what are those most high-priority issues for  
10 us to resolve in particular if we need to do rulemaking and  
11 that is the preferable solution for most of these things.

12 I think as Commissioner Svinicki indicated,  
13 none of these issues are necessarily easy, they may  
14 be simple, but they may not necessarily be easy.

15 They do, nonetheless, take time.

16 I think the staff -- did we release the  
17 SECY paper on the policy issues -- the staff did  
18 provide the Commission recently a policy paper on  
19 laying out what they think those issues are as we  
20 go forward, and there's timelines in there, I think  
21 it would certainly be helpful to hear from all of  
22 you about which of those issues the staff put in

1 place a series of timelines which would be when  
2 they would be targeting getting that information to  
3 the Commission.

4 I would be curious to see if those  
5 timelines are consistent with the issues that you  
6 think are most important to resolve on an early  
7 basis.

8 I think the idea of trying to look at them  
9 from a design perspective from a licensing  
10 perspective helps to bin them in a sense of those  
11 issues that should come first.

12 I think that would be useful information  
13 for the Commission as you go forward, if you can  
14 take a look at that and certainly let us know  
15 if you think we've got that right from a  
16 timing perspective, and I think that will help the  
17 Commissioners as we try to plan out our work.

18 The realities are, it will be significant  
19 work and if we're looking at design cert submittals in 2013  
20 that is a very short timeframe for the Commission  
21 to deal with some of these issues from a rulemaking  
22 standpoint, knowing what is most important will be

1 very important so we can try to resolve those --  
2 the ones that are most important in a timely way.

3 Just turning to some other issues, the  
4 issue that comes up quite a bit, and I think it is  
5 one of those issues that is on the list to address  
6 is the fee issue.

7 I'll give you an opportunity to weigh in with  
8 your insights about how you think the NRC should  
9 handle fees for small modular reactors.

10 MR. LORENZINI: We have been working with NEI on that  
11 question and there are some options under consideration ,  
12 that is not a simple question as you know, which is why  
13 you asked the question.

14 I don't think we have a specific proposal  
15 for you, but we're certainly trying to think our  
16 way through it and coming up with something that is  
17 fair for all parties is the challenge.

18 CHAIRMAN JACZKO: Anybody else want to comment?

19 I would say and as I've said before, that's  
20 an issue I would take and certainly one of those  
21 policy issues, while Commissioners, I'm sure, have  
22 very good ideas about how to set up the fee

1 schedule in the right way, in the end there is not  
2 a real big safety issue from the NRC perspective.

3 The more that you as an industry can  
4 present and probably broadly speaking with the  
5 folks that are behind you, to deal with fees -- it  
6 will take one issue off of our plate that in the  
7 end really doesn't involve a lot of safety  
8 concerns.

9 It's one that we don't necessarily need to  
10 be spending our time resolving, so the more you can  
11 help us with that -- it's something those kinds of  
12 discussions are ongoing.

13 I think that will only be more helpful for  
14 us as we go forward.

15 You heard some suggestions from the  
16 previous panel about ideas and ways to make this  
17 process go forward and I think, Mr. Lorenzini, it  
18 was you that talked about the importance of having  
19 high-quality submittals and you touched on some of  
20 the issues of what high-quality submittal is.

21 I think those are very helpful suggestions.

22 I'm wondering if you think that the NRC has

1 been clear enough about what we -- I've used that  
2 term and talked about that, do we have clear enough  
3 guidance about what it means to be high-quality  
4 submittal for an application?

5 MR. LORENZINI: We feel it is clear but I get  
6 really nervous when I listen to people talk about it, and I  
7 hear people who have been through the process challenging  
8 the question what is quality, what is complete design, we  
9 think we know, but then people who have been through it run  
10 into problems.

11 I always worry about what I think I know,  
12 that I don't know.

13 MR. ANNESS: Our experience is something that is a  
14 very good example of an area where we can build off of the  
15 AP 1000.

16 By the time we go through this process for  
17 an SMR, we will be coming off of this process with  
18 AP 1000.

19 Where we leave that sets the tone for SMR.

20 That makes it -- that adds certainty that  
21 wasn't there the first time around.

22 MR. MOWRY: The only other part that I guess,

1 again, given that this is a bit of a new articulation of  
2 technology that there needs to be early and significant  
3 communication and interaction.

4 I think that echoes the comments and  
5 discussions from earlier to make sure that when the  
6 submittal occurs that their expectations are well  
7 aligned with regard to what is in that and that any  
8 issues have been laid out early enough to be  
9 addressable in the process so that it is a thorough  
10 document.

11 CHAIRMAN JACZKO: I appreciate that and I think as  
12 we go forward it is certainly an area we will want to continue to  
13 make sure we have good and appropriate guidance in that  
14 regard.

15 One of the comments we heard from the  
16 previous panel, and I think it's a good one and one  
17 we have seen with the current big water reactors,  
18 is that this idea of using already approved  
19 methodologies, codes, and standards that is certainly  
20 been an area to the extent that you can rely on  
21 that given a novel technology or novel approach to  
22 an existing technology the easier that is because,

1 as Mr. Gillespie said, what we're focusing on is  
2 not looking at the methodologies but we are  
3 focusing on the safety issues and does it meet our  
4 applicable standards and that is a more straight forward review.

5 I think it is another thing I would throw  
6 in that list of high-quality submittals, I think are  
7 those submittals that really do rely on existing  
8 methodologies and codes and standards and approved  
9 codes and all of those kinds of things.

10 MR. BLACK: One of the aspects of this complete  
11 and quality submittal is the codes and standards that  
12 exist. The industry codes and standards as you probably  
13 well know have been stale for decades just because of  
14 the industry. We have undertaken a new group of the  
15 NESCC, Nuclear Energy Standards Coordinating  
16 Collaboration, co chaired by ANSI and NIST, but  
17 we're looking at the full range of codes and  
18 standards that may not be up-to-date.

19 With NRC and with industry's help, this  
20 body will determine whether we are referencing an  
21 old ASME code or IEEE code that is not current, and  
22 what are we going to do.

1           We are going to do that collectively as an  
2 industry, and DOE and NRC to do that.

3           That is a problem because if you are a new  
4 Westinghouse IRIS reactor coming in, and you've  
5 referenced the code or standard that was good for  
6 AP 1000, is it going to be the appropriate one for  
7 the IRIS and it still current, is it still  
8 maintained on a current list.

9           We all recognize that as a problem and we are  
10 undertaking activities to do something about that.

11          CHAIRMAN JACZKO: I think in regard to  
12 Commissioner Magwood's question, I think that is probably a  
13 good area for continued coordination and communication  
14 between the NRC and DOE.

15          I think as Mr. Sliva had said, we are not going to  
16 shut off your water based on your answers.

17          You survived well.

18          Again, I want to thank everyone on this  
19 panel, I think showed us this is something we need  
20 to deal with and need to look at. The small modular  
21 reactors are real and something we have a lot of  
22 work on our plate I think as a result, but that

- 1 will be something to keep the Commission and staff
- 2 busy.
- 3 I appreciate your comments.
- 4 We will take a quick five-minute break and
- 5 then we will have the staff panel to conclude.
- 6 Thank you.

1           We will now turn to the last panel of our  
2 meeting today, we will hear from the staff to share  
3 their perspectives on how the reviews are  
4 progressing and some of the issues that we will be  
5 dealing with going forward in the next year, both  
6 with the large reactors as well as the advanced  
7 reactors that we heard about.

8           Bruce, if you want to begin.

9           MR. MALLETT: Thank you.

10          Good morning Chairman, Commissioners.

11          I, also, want to join Chairman Jaczko and  
12 Commissioner Svinicki in welcoming Commissioner  
13 Magwood and Commissioner Ostendorff, if I  
14 pronounced that correctly.

15          Today's briefing is on new reactors, with a  
16 focus on design certification reviews, and insights  
17 and progress we've made in the advanced reactor  
18 program.

19          We heard the comments from industry, and I  
20 would comment that some of those issues they've  
21 raised have been resolved, and some we still are  
22 working on and you will hear about some of those

1 today.

2 Before we proceed with the briefing, I first  
3 want to note the significant progress and  
4 accomplishment the staff has achieved in all the  
5 areas of the new reactor program, this includes not  
6 only the design certification program we're going  
7 to talk about today, but also the combined  
8 operating license reviews and the construction  
9 program, and also the advanced reactor program  
10 we're going to talk about today.

11 Mike Johnson is going to note some of the  
12 accomplishments in that, but I would highlight one  
13 we just recently selected the resident inspectors  
14 for the construction program at the plant Vogtle  
15 site near Augusta, Georgia.

16 I would also point out and thank the staff  
17 for their cooperation across multiple offices in  
18 the agency, it is not only the people sitting at  
19 the table here but in both of these programs design  
20 certification advance reactors involves many  
21 offices in the agency, and I wanted to highlight  
22 and thank those offices for their cooperation.

1           It was talked about international programs, this  
2 program also part of its success has benefited from  
3 our international interactions, not only from  
4 design certification reviews but in our vendor  
5 inspection program and in our advanced reactor  
6 program.

7           With regard to the design certification  
8 reviews, we are aggressively pursuing the issues  
9 and working them to resolution, I agree with some  
10 of the previous panel speakers that communication  
11 is the key to that.

12          The design centered approach has also aided  
13 us in focusing on these issues in providing the  
14 most efficient schedule that we can provide.

15          I would comment that while schedules are  
16 important, I am extremely proud and supportive of  
17 the staff's efforts to keep safety issue resolution  
18 as a priority over schedule.

19          In the advanced reactor area, the schedules  
20 for industry are very dynamic, as you've heard from  
21 the previous panel, and very fluid.

22          We are attempting to budget for the highest

1 probability of the scenarios that we believe and  
2 not necessarily budget for all potential  
3 applications in this area.

4 I do thank you as a Commission for the  
5 resources you provided to us.

6 Currently in this year for talking about  
7 laying out that the framework and prior to receipt  
8 of applications, and you will hear about some of  
9 that today.

10 These resources also enable us to develop  
11 the policy and technical issues that were  
12 previously mentioned and the SECY paper we  
13 provided you on March 28th lays those out.

14 Not necessarily new issues, but we  
15 tried to compile in that paper all of the previous  
16 issues into one document that we could look at.

17 As the presenters in the previous panel  
18 said, we do have to prioritize and work on  
19 resolution of these, and we made some suggestions  
20 in that paper and we will be talking and dialoging  
21 with the Commission on those.

22 For now, that is all my opening comments I

1 would turn over to Mr. Mike Johnson,  
2 Director of our Office of New Reactors for the rest  
3 of the briefing.

4 MR. JOHNSON: Thank you, Bruce.

5 Good morning, Chairman, good morning,  
6 Commissioners.

7 As the Chairman pointed out, this meeting  
8 provides a unique opportunity in a single  
9 setting for us to focus on the insights from  
10 current participants in the design certification  
11 activities, along with those organizations that are  
12 going to be in the best position to leverage those  
13 insights with respect to advanced reactors.

14 From my perspective, I think this is a  
15 particularly beneficial opportunity for us.

16 Next slide, please, the agenda.

17 We plan to discuss two topics, Frank  
18 Akstulewicz, who is the Deputy Director from the  
19 Division of New Reactor Licensing will discuss  
20 insights gained from the staffs review of design  
21 certifications, reference in the combined reference  
22 license applications.

1           Mike Mayfield who is the Director of the  
2   Advanced Reactor Program, and Bill Reckley who is  
3   the Chief of the Project and Technical Review Branch  
4   in the advanced reactor program, will discuss  
5   policy issues and our plans to ensure that the  
6   agency is prepared to do those reviews for multiple  
7   new technologies that will likely be proposed.

8           Next slide.

9           Before we begin, I customarily provide a  
10   high-level status of our current reviews, and I  
11   want to do that just very briefly in the interest  
12   of time today.

13          On March 25th we received an application  
14   for an early site permit from Victoria County and  
15   it's the first of two that we expect in the next  
16   few months.

17          We have three design certifications, two  
18   design certification amendments under review, and  
19   of course, thorough and timely review of those  
20   design certifications is important in enabling us  
21   to successfully complete the combined license  
22   application reviews.

1           We have 18 combined license applications  
2 in house, 13 of those are under active  
3 review and we are midway through the design -- the  
4 application reviews of those combined license  
5 applications that were submitted beginning in 2007, and we  
6 expect we are going to complete the design in the  
7 environmental pieces of those reviews in the  
8 2011-2012 timeframe.

9           Our experience to date as you heard from  
10 the previous panel, illustrates that Part 52 is, in fact,  
11 serving as we intended it to serve.

12           The design centered review approach has  
13 been successful enabling us to preserve some degree  
14 of standardization, and also enabling us to focus  
15 clearly on safety and achieve some resource  
16 savings.

17           For all the applications, it is really  
18 important that we minimize -- that applicants  
19 minimize design and citing modifications, and that  
20 we work together to resolve open issues.

21           We are on a closure path for resolving many  
22 of the open issues that exist, and we are focusing

1 on driving the remaining technical issues to  
2 resolution.

3 Next slide.

4 Regarding construction inspection  
5 oversight.

6 The primary components of the construction  
7 oversight elements are in place in time to support  
8 fiscal year '10, inspection activities that verify  
9 quality construction.

10 On March 8th, site construction officially  
11 began at Vogtle Unit III. Our Region II inspectors  
12 were present to observe that inspection and, as  
13 Bruce indicated, Region II is really proud that we  
14 selected the construction senior resident and  
15 resident inspector.

16 We are all proud that we have that in place  
17 and they plan to open the resident office this  
18 summer.

19 We're continuing to enhance the  
20 construction oversight process and make sure that  
21 we are going to be fully staffed and fully trained  
22 to meet the anticipated inspection workload.

1 Finally, as you will hear very shortly, we  
2 are preparing for advanced reactor reviews.

3 With that, I will stop and turn it over the  
4 presentation to Frank Akstulewicz to begin our  
5 detailed presentation.

6 MR. AKSTULEWICZ: Thank you, Michael.

7 Good morning Chairman, good morning,  
8 Commissioners.

9 Much in the vein of the first panel, I am  
10 going to focus my remarks on some things that have  
11 worked well, on some insights that are applicable  
12 to our peers moving into the advanced reactor  
13 arena, and then end on remarks about what the  
14 Commission could expect in the next year in terms  
15 of work that is going to be flowing in your  
16 direction.

17 Slide five, please.

18 A couple of the successes I would like to  
19 focus on, one is the use of the design centered  
20 approach.

21 When you have 18 applications coming at you  
22 over a short time, it is difficult to be able to

1 work them all at once.

2 We instituted a process where we tried to  
3 enforce, if that's the right word, or assure a  
4 standardization within a design center to shape the  
5 reviews so one decision is applied across a number  
6 of applications.

7 That has worked extremely well.

8 The design centers have been very effective  
9 at maintaining standardization within themselves,  
10 and we continue to see the benefits of that as we  
11 are preparing the safety evaluations for the  
12 subsequent COLs within those design centers.

13 It is of real savings in terms of  
14 resources.

15 Another thing I would like to highlight is  
16 our ability to start raising issues early.

17 You heard the early panel talk about  
18 sometimes the inability to bring issues to  
19 management attention to get closure on those  
20 issues.

21 We have instituted a weekly process where  
22 we meet on a particular project center to focus on

1 those issues. Within the review, we've used an  
2 enterprise project tool to do our planning more  
3 efficiently.

4 We have entered into use of earned value to  
5 shape where we are in the process of moving through  
6 these reviews in a timely way, and all of those  
7 have focused the management attention on those  
8 issues that require our more immediate need.

9 The last thing, in terms of our success, is  
10 our outreach, we try to be very open and reach out  
11 to the communities where license applications are  
12 going to impact them.

13 We have received a number of accolades from  
14 local government and businesses about our  
15 participation and willingness to come down and  
16 speak to the folks in these communities.

17 Next slide.

18 As far as insights go, a lot of what I'm  
19 going to say isn't going to be new, I think  
20 you've heard it from the first panel already, so I  
21 will walk through this fairly quickly.

22 Importance of regulatory guidance cannot be

1 underestimated, we saw a process when we were  
2 trying to revise our Standard Review Plan and  
3 develop application guidance at the same time that  
4 applications were under development, propagated a  
5 lot of missteps across those applications.

6       If there is some offset between the actual  
7 development of the application and the  
8 implementation of the application, or the use of  
9 pilots to do that, there is a real net savings to  
10 efficiency there as these applications -- or  
11 subsequent applications get prepared.

12       We don't repeat the same errors, if that is  
13 the right word, that we have made in the first one.

14       The second communication, you heard the  
15 first panel talk about communication as it relates  
16 to the technical issues that are in  
17 front of us.

18       I would like to mention also that the  
19 importance of communication here is what their  
20 plans are.

21       It really promotes our planning process to  
22 understand what is shaping their business plans,

1 when we could expect information to come in topical  
2 reports, additional license amendments if that's  
3 the right word, it informs our process from a  
4 budgeting standpoint and also a scheduling  
5 standpoint.

6 The technical issue discussions clearly are  
7 paramount to what business is and we have to  
8 move forward with those in an open and  
9 communicative way.

10 I think we're being very successful there.

11 Next slide, please.

12 As far as the predictability, I think we  
13 have seen the value of the Part 52 process play out  
14 as the design certifications are moving toward  
15 their completion.

16 Having a certified design is clearly the  
17 most efficient use of Part 52, in terms of the  
18 process.

19 The lesson learned here, in terms of moving  
20 forward, is it would be nice to have that  
21 certification prepared in advance of actually  
22 getting an application, but there is also a value

1 to having, what I will call it a reference COL, as  
2 part of that process and that is the interfaces  
3 between the design certification and the actual,  
4 eventual owner applicant user of that particular  
5 design.

6 There are some things that we have seen as part of  
7 our application where that level of detail really  
8 has benefited from the participation of applicants  
9 in the process.

10 The second thing is first of a kind, we've  
11 heard discussions from the first panel also about  
12 the challenges of first of a kind.

13 The ability to establish the regulatory  
14 envelope in an open way, encourage the applicants  
15 to meet with us if they're using innovative  
16 technologies to discuss what the materials are,  
17 what the codes are, what the analysis methods are  
18 going to be, all of those things go to inform the  
19 staff and the applicant about what  
20 the level of detail for that review is  
21 going to require.

22 The last thing that I would like to mention

1 as an insight is the changing nature of the  
2 designs.

3 I think you've heard Sandy talk about the  
4 designs are going to evolve continuously from now  
5 through when this plant ultimately is  
6 decommissioned.

7 The important thing here is, when we get  
8 into the details of this process, we don't want to  
9 get into a process that is inefficient because we  
10 continue to review the same systems over and over  
11 because of the modifications as they occur.

12 We would like that design to be fairly  
13 stable as part of the certification process.

14 If that is a lesson learned for the  
15 advanced reactor guys, it would serve them well  
16 to try to make sure those designs are fairly  
17 detailed or established as we move into this  
18 process.

19 Next slide, please.

20 The last slide that I would like to speak  
21 to is certainly areas where they are not  
22 necessarily new processes, but they are one in

1 which we are going to engage again for either the  
2 first time, or we haven't done it in a while and  
3 that is the certification rulemakings.

4 I think we could expect to be sending the  
5 ESBWR rulemaking and the ABWR aircraft rulemakings  
6 to you probably by the end of the calendar year if  
7 we are successful in meeting our schedule  
8 requirements.

9 We are already starting to look at what it  
10 is going to take to bring that package to you, and  
11 then engage you in that discussion.

12 Mandatory hearings, again, another process  
13 we have never tried it yet, we are going to be  
14 coming to you, we understand there is a procedure  
15 that has been developed to help us in this area,  
16 but the ability to work -- to get that right level  
17 of information to you to define what it is the  
18 Commission is going to be asking for from the staff  
19 as it enters into those hearings, is an area that  
20 we will have to shape as the year goes on.

21 And the last thing as mentioned, is the  
22 first time we are going to get a renewal

1 certification, what the scope of that review is  
2 going to entail, what the departures are going to  
3 be from what was already certified will  
4 go to shape the level of review and  
5 the demands for resources in those area.

6 We will keep the Commission informed as we  
7 progress into that.

8 With that, I will finish my presentation  
9 and turn it over to Mr. Mayfield.

10 MR. MAYFIELD: Good morning, Chairman,  
11 Commissioners.

12 Bill Reckley and I are here today to tell  
13 you about the advanced reactor program and, most  
14 importantly, about some of the key technical and  
15 policy issues that have been eluded to this  
16 morning.

17 These are issues we expect will appear  
18 before the Commission in the next couple of years,  
19 so this is timely to start the discussion.

20 The advanced reactor program was created  
21 just over a year ago to provide an organizational  
22 focus on the licensing for advanced reactors, and

1 as you heard from the first panel, so that we don't  
2 become a distraction to the staff's focus on review  
3 for the large light water reactors.

4 Our focus has been and continues to be on  
5 the regulatory infrastructure for licensing these  
6 new designs, and on getting prepared to conduct  
7 reviews for the next-generation nuclear plant and  
8 the integral pressurized water reactors.

9 We are doing some very limited work on  
10 sodium fast reactors, but our emphasis is on NGNP  
11 and the integral pressurized water reactors.

12 Slide ten, please.

13 Our licensing approach for the advanced  
14 reactors is to use 10 CFR Part 52.

15 We are building on experiences in licensing  
16 large light water reactors and on previous work  
17 that was done related to advanced reactors.

18 We are very mindful of the insights that  
19 Frank talked about in the licensing reviews of the  
20 large light water reactors, and presentations we  
21 have made at various public conferences, we have  
22 emphasized to the industry their need to pay very

1 close attention to the experience from the industry  
2 side so that we may all learn from those  
3 experiences and insights and move forward so we  
4 can, hopefully, avoid some of the delays and  
5 pitfalls we have seen in licensing large light  
6 water reactors.

7 Can I have slide 11, please?

8 Our current activities related to NGNP  
9 stress interactions with the Department of Energy,  
10 infrastructure and guidance for reviewing  
11 high-temperature gas designs, addressing key policy  
12 and technical issues and dealing with first of a  
13 kind design issues.

14 Finally, on being prepared for the combined  
15 license submittal we expect to see in late fiscal  
16 2013.

17 Slide 12, please.

18 I've been rushing through these, please  
19 excuse me, but the idea was to give Bill as much  
20 time as we could squeeze out of the allotted time,  
21 so he can discuss some of the issues with you.

22 The current activities related to the

1 Integral PWRs and to sodium fast reactors follow on  
2 the general approach we've been using for NGNP.

3 We're emphasizing early discussions with  
4 the suppliers, developing review guidance for the  
5 integral PWRs, and addressing the generic policy  
6 issues.

7 We are maintaining an awareness of  
8 technology, developments, and technology issues for  
9 fast reactors, but we are not addressing any  
10 appreciable resources to those subjects at this  
11 time.

12 We have all talked a lot about the  
13 resolution of key technical and policy issues and  
14 as you noted, we recently sent to the Commission  
15 an information paper describing those issues. Paper  
16 is identified as SECY-10-0034.

17 So, as Commissioners Magwood and Ostendorff  
18 get through their inbox, that is one you may want  
19 to look for.

20 Many of these issues have been around for  
21 several years and have been addressed in previous  
22 Commission papers.

1           One key difference this time is that we  
2   must bring them to closure so that the staff and  
3   industry can move forward on the licensing reviews  
4   for the advanced reactors.

5           Taken in total, these issues represent a  
6   significant body of work over the next couple of  
7   years for both the staff and the Commission, so  
8   that we can ensure resolutions are adequately  
9   considered in the designs, and that the NRC is in  
10   the best position to perform effective and  
11   efficient reviews.

12          I would like to turn the presentation over  
13   to Bill Reckley to provide you some details on  
14   these issues and what we are doing to address them.

15          MR. RECKLEY: Thank you Mike.

16          Good morning, Mr. Chairman, Commissioners.  
17   As previously mentioned, a large part of our focus  
18   is currently on identifying and sending out  
19   resolution plans for policy and key technical  
20   issues.

21          For your information, the way we use the  
22   term in general is that a policy issue is an issue

1 that will ultimately be coming to the Commission to  
2 help in its resolution, and a key technical issue  
3 are ones that the staff believes we can address  
4 during a normal licensing or design review process.

5 That said, I don't want to minimize the key  
6 technical issues that can often be as complicated  
7 and time-consuming to resolve as some of the policy  
8 issues that will be coming to the Commission.

9 We had a workshop -- NRC staff sponsored a  
10 workshop the Chairman was nice enough to attend, in  
11 October where we laid out some of the policy issues  
12 as we saw them, and invited the industry to come in  
13 and give their views on the policy issues.

14 A challenge that we laid out at that  
15 workshop in October, was a feeling that we thought the  
16 industry needed to work together in order to help  
17 us resolve those issues that were truly generic.

18 There has been some progress in that area,  
19 we are seeing increased activity by both the  
20 Department of Energy, NEI, the American Nuclear  
21 Society, and some other forums as they come  
22 together and try to organize and prepare

1 resolutions for some of the issues for proposed resolutions.

2       Within the NRC, the Office of New Reactors  
3 is in coordinating activities with the Office of  
4 Nuclear Security and Incident Response, the Office  
5 of the Chief Financial Officer, and the Office of  
6 Nuclear Regulatory Research to coordinate all the  
7 activities that are going on with different issues  
8 in different research programs associated with both  
9 NGNP and integral PWRs.

10       As has been mentioned several times we sent  
11 out SECY paper 10-0034 to layout some of the  
12 issues, not all-inclusive, but we believe most of  
13 the issues that we'll be facing and that the  
14 Commission can be expecting to see.

15       Some of those are identified on the slide,  
16 the first one being defense in depth. We recently  
17 received a white paper from the NGNP program in  
18 regard to their plans to address the defense in  
19 depth for gas cooled reactors. It uses a  
20 combination of deterministic evaluations as well as  
21 risk informed, performance based approaches.

22       The assessment that they are doing tries to

1 take into account the inherent features, the gas  
2 cooled reactors, things like the increased  
3 de-capacity of the graphite structures and  
4 components, the passive safety features, the active  
5 backup systems, and that's an important point  
6 because as you look at the integral PWRs or the gas  
7 cooled reactors, they are fundamentally different  
8 in some aspects and that is why we are talking  
9 about the possibility of making changes to some of  
10 the policies.

11 To try to identify and address how we are  
12 going to handle, on a regulatory manner, some of  
13 those inherent features and passive safety features  
14 is what we are going to address with NGNP as the  
15 lead, and as we go forward that might serve as the  
16 background for us to develop more risk informed  
17 performance-based regulatory approaches up to and  
18 including the possibility of a technology neutral  
19 approach.

20 We've mentioned staffing several times  
21 again, the inherent features in these small module  
22 reactors or the gas cooled reactors, the increased

1 time that you have between the initiation of an  
2 upset and the challenge to a fission product  
3 barrier, the simplicity of the designs, those  
4 things may warrant looking at reduced staffing  
5 levels, and we are in the process of doing that  
6 now.

7       The industry will have to come in, make  
8 some proposals, make some justifications, we will  
9 review those, compare them against our own research  
10 programs, other industry data, to assess the  
11 feasibility of that.

12       Multi-module facilities are going to, again,  
13 increase the regulatory challenge, we will have to  
14 determine a regulatory framework for how to handle  
15 licensing of individual modules versus the whole  
16 facility and then the insertion of modules into an  
17 operating facility will introduce operational  
18 concerns as well.

19       We've mentioned security and off-site  
20 planning a number of times, as we look at the  
21 nature of these reactors, how they behave in  
22 response to accidents, what is the source term from

1 a severe accident, we will look at those  
2 features and assess whether within that there is a  
3 justification for reevaluating both security in terms of the design basis  
4 threat and, in terms of security, also what has  
5 been mentioned several times and is consistent with  
6 the advanced reactor policy statement which is to  
7 integrate into the design the security features as  
8 best you can and Mr. Mowry addressed that several  
9 times.

10 In terms of financial matters, the Chairman  
11 mentioned fees, we issued last year an advance  
12 notice of proposed rulemaking to solicit comments  
13 on a variable fee structure, we are evaluating  
14 those comments, we have a working group, we are  
15 looking to make a proposal.

16 The industry through NEI and the American  
17 Nuclear Society are also preparing white papers on  
18 possible fee structures.

19 Another area within the financial realm is  
20 Price Anderson insurance and liability, there are a  
21 couple issues there we will be looking at.

22 The current structure of both Price

1 Anderson and our regulations don't really reflect  
2 some of the sizes and configurations currently  
3 being assessed, so we will have to look at both the  
4 legislation and our regulations to see if they are going  
5 to fit.

6       One easy example is that when the Price  
7 Anderson Act was changed several years ago to  
8 address modular plants, it address modular plants  
9 as being between modules between 100 and  
10 300 megawatts electric, we now have some designs that  
11 fall outside that range.

12       So, we will need to reassess that.

13       In terms of the manufacturing license  
14 bullet on the slide, we as the NRC have issued one  
15 manufacturing license, it was for OffShore Power  
16 Systems Floating Nuclear Power Plant in the 1970s.

17       One issue is that that manufacturing  
18 license covered the whole facility, and as was  
19 mentioned several times, one of the differences we  
20 are talking about now is the manufacturing may  
21 entail the nuclear steam supply system.

22       However, there will be site specific

1 structures and systems built to connect that  
2 manufactured NSSS into a site-specific facility.

3 We will have to look at both policy and  
4 possibly rulemaking if we were to elect to allow  
5 the manufacturing license to only cover a part of  
6 the plant versus, basically, the whole plant as it  
7 did for all short power systems.

8 Slide 14, please.

9 Looking forward, we're going to continue  
10 and increase our interactions with the industry,  
11 both DOE through NGNP and the integral PWR  
12 vendors and SFR vendors to some degree, attend  
13 conferences, and generally continue to communicate  
14 as much as we can.

15 Industry has begun, as you saw in some of  
16 the slides, to present us with topical and white  
17 papers we will begin actively reviewing those and  
18 and while we are doing that we will also be trying  
19 to prepare papers for the policy issues and also  
20 internally licensing plans for the key technical  
21 issues to try to make sure that we can be prepared  
22 for the applications.

1 Final slide, please.

2 In conclusion, the message that we have  
3 tried to give to the vendors is to involve the NRC  
4 early, to let us know what the design  
5 considerations are, what is being proposed so we  
6 can start to lineup with what the issues might be,  
7 what the licensing approach may be.

8 We are actively engaged now with a number  
9 of vendors preparing for applications as early as  
10 2012 and for NGNP 2013.

11 We understand what a formidable challenge  
12 it will be to be prepared for those applications in  
13 that short time frame.

14 We are, however, emphasizing the need for  
15 both the NRC staff and industry and DOE through  
16 NGNP to take full advantage of what time we do have  
17 between now and the applications when they come in  
18 in 2012-2013.

19 Thank you.

20 MR. MALLETT: This concludes our presentation.

21 CHAIRMAN JACZKO: Thank you, we will start our  
22 questions with Commissioner Svinicki.

1           COMMISSIONER SVINICKI: I want to begin, as the  
2 Chairman did, by acknowledging, it was part of my opening  
3 statement about how I was surprised anew every time I'm  
4 preparing for another one of these periodic briefings about  
5 how much further we have come and how much is going on,  
6 but I want to compliment the staff for all of their  
7 juggling right now and we are -- the focus in these  
8 meetings is always to talk about improvements and issues,  
9 but we have to keep our eye on the fact that we are making  
10 so much, there is a lot of forward momentum and we are  
11 making a lot of progress here.

12           I will start with you, Bill, since you  
13 stepped through on slide 13, the policy issues in  
14 some level of detail.

15           Something I hadn't really thought about  
16 when I talked about these issues with the previous  
17 panels, is as you were describing them it was  
18 occurring to me that some of these there is going to be  
19 an interconnection that if we think we have a  
20 proposed resolution in one, we're going to have to  
21 make sure that it is consistent with the proposed  
22 resolution on another one.

1           That adds another layer of complexity to  
2 the staff's work and to the Commission's  
3 consideration of these issues and also gets to the  
4 notion of priority and sequencing of them.

5           That will be -- I think you described it as  
6 a significant body of work, or one of you did for  
7 the staff going forward, and I think that is  
8 another element here.

9           I know also, Bill, you mentioned in  
10 passing, rulemaking and prior to this I was talking  
11 about rulemaking as the final step in the design  
12 certification, but then there are all the other  
13 rulemaking, meaning as we are in an ongoing basis  
14 we're looking at rules previously completing work  
15 on aircraft impact assessments, but things like  
16 that. Then they have a perturbing effect through  
17 the system, because wherever applicants are or  
18 designers in the design certification, it is  
19 something then that they have to accommodate.

20           I know that part of what of the staff or  
21 what Mr. Borchardt has talked to the Commission  
22 about previously is kind of looking across the

1 totality of what we are doing in rulemaking to at  
2 least be smart about the sequencing of different  
3 activities, so I know that NRO has been a little  
4 bit front and center in trying to manage some of  
5 these impacts and helping things be done again in the  
6 smart way where we can.

7 That gets me to another comment I wanted to  
8 make, which is dealing with uncertainty and budgeting.  
9 And Dr. Mallett talked about the fact that we need  
10 to look at those applications that we think have  
11 the highest probability of materializing.

12 I think NRO, in some ways, is uniquely  
13 challenged in terms of the tremendous staffing up they  
14 have gone through.

15 You've brought on board new staff, you will  
16 have trained them in this expertise of being a  
17 reviewer, yet we have had this push of activity.  
18 Then as you look to out years it occurs to me and,  
19 Mike maybe you want to respond to this, does the  
20 SMR work or resolving these policy issues in doing  
21 that -- does that give you any opportunities for  
22 resource leveling, we've invested so much in these

1 new staff and it would be -- it is certainly much  
2 more effective to be able to apply their talents as  
3 perhaps other reviews are winding down.

4 Is that something you are thinking through  
5 in NRO?

6 MR. JOHNSON: The answer is yes, we are in fact  
7 tomorrow and the next day we are off in a management  
8 retreat looking at resources in 2012, looking at the changing  
9 workload, and the increase -- potential increase in small  
10 modular reactors provides an opportunity for us to offset  
11 some of what is happening in terms of the decrease of the  
12 completion of licensing that will happen around 2011,  
13 2012 for the large light water reactors.

COMMISSIONER SVINICKI: Again, I would say some of  
14 this circumstance was not of NRC's making, it has to do  
15 with the Energy Policy Act of 2005, the incentives which  
16 caused a large wave, but of course a lot of our external  
17 stakeholders are concerned that it certainly is not  
18 optimally effective to say I want to staff up for a huge  
19 wave of work and then have nothing to do for those folks.

20 It may work out that the pacing on the  
21 small modulars or even the advanced reactor work  
22 that might actually work out in a way that will

1 help us with resource leveling.

2 Bruce, did you want to add to that?

3 MR. MALLETT: I would also add that these  
4 individuals that are doing license reviews for the COLs,  
5 now design certifications are also very valuable to us in  
6 the construction program, because they know what the  
7 licensing basis is and I think they will be very valuable  
8 as we enter into the construction program as well.

9 COMMISSIONER SVINICKI: I noted our naming of  
10 senior resident and resident at -- for Vogtle III and IV  
11 activities, that's how we would describe that and that was  
12 certainly somewhat historic, so I share the staff's  
13 excitement about that, that's a real visible sign of  
14 reaching a different stage in the process.

15 I have been following, it wasn't the  
16 subject of today's meeting, but I know the staff is  
17 continuing to work on, I think we are now calling  
18 it cROP, the construction reactor oversight  
19 process, and I appreciate there is still a lot of  
20 engagement.

21 There is ongoing engagement with applicants  
22 and with the industry on that.

1 I mention it for no other reason than to  
2 say it is something -- it is tricky  
3 for us to get it exactly right, I'm sure we will  
4 learn as we go, but I continue to have an interest  
5 in that.

6 And we'll follow that closely.

7 I'm a little over, but I just want to throw  
8 one last thing out there.

9 I asked a lot about issue resolution with  
10 the previous panels.

11 Any of you have an opportunity, do you  
12 feel -- do we escalate issues when we need to? Do  
13 we leave them too long at the front-line reviewer  
14 level? Do you feel that there are any impediments  
15 inside the NRC to getting issues resolved, and  
16 again I got a positive to my earlier question that  
17 we seem to be trending toward greater  
18 resourcefulness in getting issues resolved, but do  
19 you think there is any impediments inside the  
20 building to elevating issues and getting them  
21 resolved, defining them?

22 MR. AKSTULEWICZ: The short answer is no.

1           We have a number of processes for the staff  
2 to raise issues for our attention, and the internal  
3 processes that we have to look at -- the overall  
4 project has been very effective at elevating issues  
5 that may be not have had our attention before or  
6 give us an opportunity to ask questions about the  
7 status of those.

8           I think we are at a very good place with  
9 respect to issues getting elevated for management  
10 attention right now.

11           MR. JOHNSON: If I can just add, we are being  
12 increasingly engaged as a management team as we get closer  
13 and closer to completion of combined licenses, because we  
14 know there are issues that need to be resolved in a timely  
15 manner.

16           Also if I can also quickly on the CROP, there's  
17 an information paper that will come to you shortly  
18 that provides additional status on where we are.

19           COMMISSIONER SVINICKI: Thank you.

20           Thank you, Mr. Chairman.

21           COMMISSIONER MAGWOOD: Thank you, Mr. Chairman.

22           First a general question for Mr. Mallett

1 about the staff makeup itself.

2 I'm curious to whether there are any areas  
3 you are aware of where the staff is deficient in  
4 certain areas of expertise?

5 Are there types of people that you are  
6 still looking for to fill certain holes in this  
7 stage?

8 MR. MALLET: I will start out and then ask Mike  
9 and Frank and the others to contribute.

10 I believe we have a great staff with a lot  
11 of expertise, and we have recruited very  
12 successfully over the last three or four years  
13 those staff.

14 If there's any deficiencies, it's probably  
15 myself in understanding the staff, but I do think  
16 we have been able to reach out and where we don't  
17 have the expertise we have been able to re-employ  
18 individuals back who have that expertise and to go out

19 to contracting to get it. [NOTE FOR RECORD: There is one area of expertise where  
the Office of New Reactors has a potential shortage in staff due to the difficulty in recruiting, that  
area is in individuals with expertise in hydrology.]

20 I believe it is all available there, there  
21 are some challenges in areas where there are new  
22 designs and I think those -- in answer to

1 Commissioner Svinicki, the key to those is  
2 understanding what the issue is and getting it to  
3 the right expertise to give us that answer.

4 I would ask Mike or Frank if they want to  
5 add to that.

6 MR. JOHNSON: Great answer, Bruce.

7 I would just add that we are in the retreat  
8 tomorrow going to focus on skill sets, specifically  
9 looking at 2012, but we want to answer that  
10 question about what the work load is in 2012 and what that  
11 means with respect to new skills or skill gaps so as  
12 we go forward, be better armed to deal with what we  
13 are going to deal with in the future.

14 Today, I think we're okay, we're able to  
15 access the skills we need to do the work that we have on  
16 our plate.

17 COMMISSIONER MAGWOOD: Excellent, thank you very  
18 much.

19 Question for -- a general question on the  
20 advanced reactor side.

21 As I think we heard from the previous  
22 panel, the focus seems to be quite clearly on the

1 production of electricity, largely through the  
2 deployment of these modules to create a large  
3 plant.

4       It seems to me that when the discussion  
5 about the small reactors various technologies first  
6 started to come up about ten years ago, there was a  
7 lot of discussion about deployment of single  
8 modules in remote locations, discussion about  
9 deployment of modules co-located with industrial  
10 processes for process heat use.

11       Are these issue still in the forefront and  
12 are you looking at those?

13       MR. RECKLEY: Yes, both are still in the  
14 forefront. NGNP in particular, is especially talked about  
15 for process heat applications.

16       Be it oil refinery or chemical process.

17       The remote locations is still out there,  
18 not as prevalent as it had been maybe a couple of  
19 years ago, but we are still actively working with  
20 Toshiba on its 4-S design, and there are some others in  
21 the Generation IV arena dealing with other  
22 technologies that are smaller and particularly

1 focused at remote locations.

2 That idea is still out there.

3 That one may be one more aimed at the

4 international market at this point than the

5 domestic market.

6 MR. MAYFIELD: I think I would emphasize that the

7 remote location aspect seems to be more in the

8 international community, we see a lot of engagement with IAEA and the

9 so-call "new entrant" countries through our Office of International Programs.

10 NRO has maintained an active dialogue in

11 those communities. DOE through the, I guess its now defunct, it

12 was the infrastructure development working group is still in active

13 dialogue.

14 Craig Welling and his staff we have been

15 working with to maintain that interaction.

16 The deployment for these technologies,

17 particularly some of the GEN IV technologies, there

18 is a lot of interest in that for the new entering

19 countries in what are very definitely remote

20 locations.

21 COMMISSIONER MAGWOOD: Since you mentioned you are

22 still looking at some of these applications, are there any

1 special issues -- any resolution to any of the questions  
2 that came up a few years ago about co-location of these  
3 reactors on industrial sites?

4 MR. RECKLEY: That is still identified as one of  
5 the issues, and I think it is talked specifically in SECY-10-0034,  
6 we didn't put it up today because it tends to be an  
7 NGNP issue more than a generic issue across the SMRs.

8 However, yes, it is still a significant  
9 issue that we will have to work out and there will  
10 be some issues in that regard that the Commission  
11 may very well get involved in, because once we  
12 start to consider the co-location, there might be  
13 regulatory jurisdiction issues with other agencies,  
14 where does the nuclear part end, where does the  
15 chemical part start? And some of those will likely  
16 end up coming to the Commission for consideration.

17 COMMISSIONER MAGWOOD: Thank you, Mr. Chairman.

18 COMMISSIONER OSTENDORFF: I want to thank all of  
19 you for your presentations today and also for the  
20 background materials you provided to us before today's  
21 session, it was very helpful.

22 I want to ask Bruce a question on human

1 resources and human capital.

2       Quickly, I'm trying to come up to speed on  
3 some of these issues, but I also think there's a  
4 question that has been asked previously but I want  
5 to kind of boar down on one aspect.

6       Does the NRC for the Federal staff have a  
7 listing of critical skills or areas of expertise  
8 with a mindset of looking at mentoring, coaching,  
9 people that skill was not exercised for x number  
10 of years in the past. When I was at DOE and interfaced with DOD  
11 the Defense Science Board did a very detailed study for nuclear weapons complex in  
12 this area and it listed 750-800 different skill sets  
13 that were required to sustain the nation's nuclear  
14 weapons stockpile in the absence to testing.

15       I don't know if there's any analysis set of  
16 skill sets that exist here within the NRC family?

17       MR. MALLETT: Thank you Commissioner. Let me  
18 start out and then again I will have Mike -- the two Mikes  
19 respond. We do have skill set inventories that we've  
20 created in the agency, and I call it the SWP, but  
21 most of that is not utilized across the agency in  
22 an integrated fashion.

1           Each office has a skill set that they put  
2 together, like Mike has one for his office, Mike  
3 Mayfield has for his division, and I'm sure Frank  
4 has for his.

5           They use them in recruiting.

6           The regional offices use them in recruiting  
7 to go after those particular skill sets.

8           Those help us look for voids that we have  
9 amongst the staff like in metallurgy, hydrology and things like  
10 that.

11          To say we have an integrated program, I  
12 think would be a miss because each office has their  
13 own.

14          We do meet with the offices to go over that  
15 and what we have to recruit when we talk about the  
16 budget and what is missing, and we also meet when  
17 we look at hiring reemployed annuitants.

18          We have a panel that looks at that, called the FEPCA Panel,  
19 and it looks at what is deficient in our recruiting  
20 process.

21          I would add one more thing, we also, I'm  
22 talking mostly technical there, we also, Mike and

1 his staff, has done a great job of looking for  
2 other skill sets.

3 We've learned in this licensing process,  
4 again, that we need project management skill sets,  
5 and we need to know how to manage schedules and project  
6 plans, and they focused on that with their  
7 managers. Our Officer of Nuclear Reactor Regulation  
8 is also focused on that in their training of their  
9 project managers.

10 Last, but not least I would mention Mike  
11 and them have this idea's program for training  
12 reviewers to focus on the skill sets that a  
13 reviewer might need.

14 I probably have stolen all of his answers  
15 but let me turn it over to Mike to add to that.

16 COMMISSIONER OSTENDORFF: Mike, would you add  
17 anything to that?

18 MR. JOHNSON: No, sir.

19 COMMISSIONER OSTENDORFF: One last question,  
20 Bill. On slide 13, the policy and key technical issues  
21 one of the things down there was the manufacturer license.

22 I know the previous panel had talked about

1 shifting from on-site construction to more of a  
2 factory type of approach.

3 I know the last two decades in particular,  
4 the military has struggled with – I speak from my experience with the  
5 submarine force, had a heck of a time trying to, in the 1990s, identify sufficient  
6 vendors for particular primary plant components,  
7 reactor coolant check valves, for instance,  
8 fasteners that met certain quality assurance  
9 specification requirements.

10 Those kinds of issues, I know DOE, we had  
11 issues and that the quality certification process  
12 especially for parts manufactured overseas was  
13 always an open question.

14 Can you talk very briefly about what you  
15 see as some of the key issues from where you sit with  
16 respect to the manufacturing license issues?

17 MR. RECKLEY: There's a couple issues and the  
18 manufacturing license aspect is a particular licensing  
19 provision under Part 52.

20 Many of the issues you described would  
21 exist whether you use a conventional combined  
22 license and design certification process, or a

1 manufacturing license.

2 The manufacturing license, the primary  
3 challenge I believe we will have is that we just  
4 haven't used it before.

5 As we see components coming in from  
6 overseas to be assembled perhaps at a central facility,  
7 that will be an area that we will have to as a  
8 regulator, look at to make sure that the quality  
9 assurance programs trace back to their origin even  
10 though they are being assembled under the  
11 manufacturing license perhaps at a single site in  
12 the United States.

13 I don't think that aspect of it is  
14 dramatically different than what we would face for a  
15 normal construction program.

16 The manufacturing license process may  
17 introduce some specific challenges again, because  
18 we haven't used it since the 70s and we never saw  
19 it work all the way through the process.

20 MR. MAYFIELD: If I could add, we have within  
21 the Office of New Reactors the Division of Construction and  
22 Inspection and they have a very large activity dealing

1 with vendor inspection, they do a lot of overseas vendor  
2 inspections, some of it independently, some of it in  
3 conjunction with the regulator in that country.

4 They have been ramping up to deal  
5 specifically with the manufacturer of modular  
6 plants and deal with construction -- whatever the  
7 degree to which it will be construction for these  
8 plants.

9 This is an area where Glenn Tracy and his  
10 staff have been paying close attention to what is  
11 been going on, looking at timescales, reaching out  
12 to Region II to deal with this new set of reactors  
13 and the fabrication and construction issues  
14 associated with them.

15 The quality inspections for foreign vendors  
16 because there could very well be foreign supply  
17 steams both for these smaller plants as well as  
18 the large light waters.

19 If I could come back to your last question  
20 on skill sets.

21 One of the things that we didn't mention is  
22 a fairly large activity, agency wide, dealing with

1 knowledge management.

2 Marty Virgilio has been the executive  
3 champion for that. It is a major undertaking for us,  
4 we all across the agency pay close attention to it  
5 and work at it.

6 That, frankly, is a great resource as we  
7 are looking at how to ramp up and what skill sets  
8 remain in the agency that we can tap on to.

9 We did reviews of the prism design several  
10 years ago, dealt with sodium fast reactors, we have  
11 licensing experience with different technologies,  
12 and we are reaching out to the staff, some of whom  
13 make me look young, that have experience in these  
14 areas.

15 We very much tap on to those skill sets to  
16 the degree we can.

17 COMMISSIONER OSTENDORFF: Thank you.

18 MR. JOHNSON: Commissioner, can I come back to  
19 one last part -- an answer to your question is, you put  
20 your finger right on the heart of what is different about  
21 construction, today it is international and today it is  
22 modular, it causes us to look differently at that

1 construction.

2       We do have an invigorated vendor program  
3 that we will talk about in the fall, hopefully,  
4 along with other construction topics, but also it  
5 is modular.

6       We are going to be at the Lake Charles  
7 facility looking at modules as they are constructed, because it is  
8 important that we get those insights as part of the  
9 overall inspection that we are going to do to make  
10 sure plants are built as they were designed and  
11 licensed.

12       COMMISSIONER OSTENDORFF: Thank you.

13       CHAIRMAN JACZKO: I appreciate the presentations  
14 and I think the good questions that have been asked --  
15 jogging my memory here, but I think that at the time the  
16 Commission was doing Part 52 there was discussion and talk  
17 about removing the manufacturing license provision from  
18 Part 52, it may not have been at the staff level -- it  
19 tells you how times have changed I can recall a  
20 conversation with somebody on my staff and we were talking  
21 about it and they said we might as well keep it in there  
22 And as it turns out that may be something we'll actually use.

1           That was maybe four years ago -- three  
2 years ago, time has changed very quickly and I  
3 think we were lucky in that case, which I think a  
4 lot of what the focus has been on this particular  
5 meeting in this day, the work that we have in front  
6 of us and I think there is a significant amount of  
7 work -- significant amount of policy work that the  
8 Commission will have to deal with to resolve issues  
9 and resolve those policy issues well in advance of  
10 the submittals coming -- well in advance is  
11 probably past -- we don't have well in advance as an  
12 option right now.

13           At least in advance of these designs certs  
14 coming in, and ultimately the COL applications if  
15 they do follow.

16           That will certainly be an issue for us as  
17 we go forward and making sure we can prioritize that  
18 work and get the important work done.

19           With that in mind, Bill, just one question  
20 for you, those issues that you laid down, obviously the Price Anderson  
21 that may be something that requires a statutory  
22 change and not a lot necessarily that the Commission can do

1 with that particular provision.

2 Of the others that you talked about, are  
3 they generally issues that those things for which  
4 there are policy, is it rulemaking or are there  
5 other mechanisms to address those issues other than  
6 through rulemaking?

7 MR. RECKLEY: As we move forward I think what we  
8 will be doing is laying out a licensing plan or design  
9 review plan for each of these applications as they come.  
10 in. We will see if there is time and if  
11 rulemaking is the appropriate vehicle for that  
12 design while trying to keep it on its schedule.

13 For most of the issues that we have  
14 identified, if you look long-term at the  
15 commercialization of these in a broader scheme, I  
16 think it will involve rulemaking.

17 When they do and how we integrate that with  
18 the licensing or specifically design reviews, we  
19 will be working that out over the next couple of  
20 years.

21 CHAIRMAN JACZKO: They are for all fundamentally  
22 of a rulemaking nature?

1           Whether they involve rulemaking or not is a  
2 question of our timing.

3           Following closely along the lines of the  
4 rulemaking efforts, there are other issues perhaps  
5 which don't require rulemaking but may  
6 require guidance changes or simply updating of  
7 guidance, are we approaching the guidance in the  
8 same way we're looking at those issues for which  
9 there may be rulemakings? Is there a plan to review  
10 the relevant guidance documents and update guidance  
11 documents that will be applicable?

12          For instance, I'm sure our guidance  
13 documents on manufacturing licenses are woefully out of date.

14          MR. RECKLEY: If we have any.

15          Yes, we are looking across the board.  
16 Basically what we have done for each of these  
17 applications -- potential applications is actually  
18 construct a framework that looks like an  
19 application so that we start to look thoroughly  
20 throughout the process and see where there are  
21 going to be issues for this design in this area so  
22 we can start to identify and use our own staff and

1 contractors staff to try to resolve both the  
2 technical issues as well as the policy issues.

3 CHAIRMAN JACZKO: I, again, want to thank the  
4 staff for their hard work and thank the Commission for a  
5 very good series of questions.

6 I think this was a very informative discussion  
7 for the Commission. We have a lot of work in front  
8 of us and I think one of the things we will be  
9 doing the next month or so is looking at how do we  
10 prioritize that work and figure out how to get some  
11 of these rulemaking things done in a prompt way and  
12 in a thorough way that's necessary.

13 I want to thank my two new colleagues for  
14 their contributions and very soon we will have a  
15 full table on this side. And with that, we are  
16 adjourned.

17 Thank you.

18

19 (Whereupon, the Meeting was adjourned at  
20 11:55 a.m.)